ISSN 0253-4901

Food DIGEST

Vol. 21 No. 1 January - March 1993

Central Food Technological Research Institute, Mysore
National Information System for Science and Technology
Department of Scientific and Industrial Research, New Delhi

FOOD DIGEST

Vol. 21, No. 1
Jan - March1998

215

National Information Centre for Food Science and Technology
Central Food Technological Research Institute
Mysore - 570 013, India

Compiled and Edited by

V. Krishnaswamy Rao

Geetha Seetharam

DTP Production

Savita Vibhakar

Sunil Sarat P

Production

S. Umesh
P.S Ganesh Prasad
G. Venkateshan
C.N.Janardhana

Annual Subcription: Rs.300.00, US$ 70.00, Single copy: Rs. 60.00

FOOD DIGEST Vol.21,No.1, Jan-March 1998

CONTENTS

RAW MATERIALS

1 Spreadable butter 'straight from cow'

UK scientists have produced a spreadable "designer" butter made from the milk of cows fed on a special oil-rich diet. It could be on supermarket shelves within six months. The new butter stems from research into innovative or healthier dairy foods such as new types of low fat milk and cheese.

These are made by changing the cows's diet to alter the butter fat and protein in milk. The butter produced in trials at a dairy research centre in Hampshire rivals the "spreadability" of the soft butter produced by Anchor Foods, the European marketing arm of the New Zealand Dairy Board. Anchor's butter is made by breaking down and remixing the fats and fluids in cream, while the new butter is made "straight from the cow".

{Business Standard 17 April 1997, 8}

2 Turkey meat

Turkey meat, a delicacy in the West, may soon make an appearance in Indian homes.

Scientists of the Central Avian Research Institute (CARI) at Izzatnagar, near here, have perfected a technique for breeding the turkey and its parent stock (choozas) in tropical conditions and propose to transfer it to poultry farmers.

The institute has done pioneering work in genetic improvement of Japanese quails for egg and meat, and has developed a package of nutritional health care and husbandry practices for poultry farmers and the industry. The institute has also developed and standardised a method to increase the shelf life of eggs and meat under ambient conditions and also under refrigeration.

Research in the field of poultry nutrition has helped to develop feed formulas to optimise growth, production and reproduction in layers and broilers, quails and guinea fowls.

{ The Times of India 18 November 1997,8}

STORAGE AND INFESTATION CONTROL

3 Antifreeze bacteria

Antifreeze producing bacteria, discovered by Japanese scientists, have been studied for potential use in food preservation technology, reports *Look Japan* . The discovery followed several years of research at the Kansai University to find antifreeze producing microorganisms from soil, drift ice and fallen leaves from cold regions.

The freezing of foods halts the activities of the microorganisms and enzymes, thereby halting metabolic and biological changes in the food. Thus food, which is not changed by freezing, can be preserved in their fresh, raw state

analogues that were simpler and cheaper but just as effective by swapping the natural glucose scaffold for glycerol, a simpler molecule which accommodates three instead of five fatty acids.

The fatty acids released include butyric acid, which makes rancid butter smell. But the fatty acids are released so gradually from the wax, and in such small quantities, that only insect pests can smell them.

Field experiments at Cornell show that the larvae affected include the tomato fruitworm (*Helicoverpa zea*) and the beet armyworm (*Spodoptera exigua*), which together cause damage to tomatoes.
{New Scientist 22 November 1997,26}

6 Controlling *E. Coli*

Recent outbreaks in Europe of Escherichia coli (*E.coli*) O157:H7, including the latest tragedy in Scotland when 21 elderly people died, have again captured the attention of meat producers worldwide. Purasal, a sodium lactate from Purac Biochem, is one product that inhibits the growth of *E.coli* O157:H7 and other bacteria in meat products.

"According to independent reports, farm animals, especially cattle, have been identified as a reservoir for O157:H7," said Pieter Paul Lamers, technical sales engineering at Purac Biochem. "In the US, *E.coli* O157:H7 has been found on approximately 60% of beef cattle feedlots and about 2% of cattle are culture positive for *E.coli* O157:H7.

"Purusal S is sodium lactate, which is the sodium salt of natural lactic acid produced by fermentation from sugar. It can be used as a bacteriostatic agent in meat products in food processing and catering operations. Purasal P is the pottassium salt of natural lactic acid."

Lactic acid itself (available from the company as Purac) can be sprayed on carcasses in a slaughter-house to decontaminate them. "Although Sanitation and Good Manufacturing Practices are still the most important factors in controlling microbial contamination, meat processing plants with the most sophisticated hygiene still encounter pathogenic microorganisms." Lamers said.

Purasal can be used in whole muscle products such as cooked ham and roast beef as well as comminuted meat products such as hot dogs, fresh and cooked sausages and pate. It is available as a 60% solution or in solid form, and has a slightly saline taste that enhances flavor.
{Food Engineering Int'l June 1997,18}

PROCESSES

7 Coffee bean treatment

A process (European Patent Application EP 0 755 631 A1) for the improvement of the quality of raw coffee by treatment with water vapour and water at high temperature and pressure; concentrations of the undesirable constituents pyrocatechin, pyrogallol and hydroquinone in the coffee are reduced. Moisture content is adjusted to 2-28% ;

temperature is adjusted to a value of <95° C; the raw coffee beans are heated for up to 20 min at 130-150° C ; and the heated coffee beans are treated under pressure (adjusted over the range of 0.1-1.4 bar) for 130-180 min, with constant infeed of fresh steam and liberation of steam containing undesirable constitutents of the coffee beans; pressure is then released and the coffee beans are held under vacuum to allow the evaporation of moisture until a moisture content of 10-12% is achieved. Finally, the coffee beans are roasted, giving roasted coffee.
{Trends in Food Science & Technology October 1997, 348}

8 Encapsulated freeze-dried green tea

A process (German Federal Republic Patent Application DE 195 30 868 A1) for the preparation of a green tea product in which the polyphenols are present in an easily available non-oxidized form. Fresh green tea leaves are cooled to a temperature at which phenol oxidase acitivity is ≤1% of that at normal temperature, freeze dried, powdered and packaged in capsules.
{Trends in Food Science & Technnology September 1997, 316}

9 Flavour granules

A process (French Patent Application FR 2 737 134 A1) for the manufacture of granules that contain flavouring, food, dietic or cosmetic substances, which is especially applicable to granules that contain plant extracts or essential oils. The process is based on: the formation of a core made from a carrier material with or without active ingredients; coating this core with an active ingredient (with or without carriers); drying the coating; and sieving to separate the granules.
{Trends in Food Science & Technology September 1997, 315}

10 Encapsulation of aroma/flavour compounds

A process (United States Patent US 5 580 593) for encapsulating aroma or flavour compounds for a beverage by forming an oil-in-water emulsion from a vegetable oil, an aqueous medium and a water-soluble, carbohydrate-based film-forming agent. A sufficient amount of the film-forming agent is added so that the aqueous phase of the emulsion contains at least 50% (w/w) of the soluble carbohydrate solids. The oil-in-water emulsion is sprayed onto a soluble beverage powder, whereupon the aqueous layer of each droplet evaporates to form the capsules. The moisture content of the soluble beverage powder after spraying is <5% (w/w). In use, the soluble beverage powder is dissolved in hot water to release the aroma or flavour.
{Trends in Food Science & Technology October 1997, 348}

11 Preparation of flavoured processed meat product - by adding Lactobacillus fermentum to processed meat product to generate colour

Non salt durable lactobacillus fermentum is added to the raw processed meat product to generate colour. JP-186307

Use - The product is used as bacon, ham, sausage, etc.

Advantage - Processed meat of good quality is prepared having good flavor. Good colour is obtained without using colouring agents.
{Food Control 8(4), 1997,212}

12 Steam - pasteurize meat without cooking

A processing technique that kills *Salmonella* and other harmful microorganisms on raw meat has been developed and patented by the U.S. Department of Agriculture's Eastern Regional Research Center (ERRC; Wyndmoor, Pa.). It works by first evacuating the air around meat, exposing the meat to a burst of 290° F steam, followed by vacuum cooling. Within 25 ms, 99.99% of the bacteria are killed on the surface, where such microorganisms reside, without cooking the meat, says developer Arthur Morgan.

Alternative techniques, such as washing with hot water or bactericides, are not efficient because of the liquid's inability to overcome the capillary pressure in pores where a bacterium can reside, says Morgan. And the meatpacking industry is limited in using heat, because meat must keep its raw appearance or consumers won't buy it , he says.

A commercial version of the prototype could treat 4,000 chickens/h, serving an entire broiler processing line. Adding the equipment to a slaughterhouse line would increase the cost to the consumer of less than $0.01/lb. ERRC plans to license the patented device.
{ChemicalEngineering 29 November 1997}

13 A hot fermentation process makes ethanol cheaper and faster than yeast

Developed by Agrol Ltd. (Guildford, U.K.), the closed-loop fermentation process uses thermophilic bacteria that survive at temperatures over 70° C. As a result, ethanol is produced up to ten times faster than by traditional yeast fermentation. Yeasts only metabolize the sugars from grains, sugar beets and canes, so that feedstock prices account for 60-80% of the ethanol production costs. Because the thermophiles can also metabolize the sugars within hemicellulose (forestry and agricultural waste products), production costs can be slashed by 60%, says Agrol.

The crude acid hydrolysate of any biomass is continuously fed to an anaerobic fermenter where thermophile cells produce ethanol, CO_2 and organic acid by products at 70-75° C, Cells are recovered from the emerging broth by a centrifuge, and recycled to the fermenter. The liquid is distilled to give

95% ethanol. The stillage, consisting of formic, acetic and other acids, is fed to a second fermenter for growing fresh thermophiles. Each ton of feedstock produces 400 kg ethanol. A pilot plant will produce 4 m.t/yr of ethanol when it starts up at the end of the year.
{Chemical Engineering November 1997,23}

14 Recovery of tocopherols

The consumption of natural vitamin E is now being advised by many health professionals, particularly doctors in the USA, as a way of helping to alleviate a fatal heart attack. The isolation and preparation of tocopherols from vegetable oils therefore has increasing economic importance. This patent WO 9721697-A1 describes a method of extracting tocopherols from vegetable oils, tall oils or products from papermaking processes.

In the described technique, free fatty acids and triacylglycerols are esterified by mixing with low molecular weight alcohol in the presence of a zinc catalyst comprising zinc oxide and/or zinc hydroxide to form a mixture having lower boiling points than the tocoherols or sterols.

This patent is also interesting because US papermaker Westvaco Corp is planning to link with Finnish margarine manufacturer Raisio to recover sterols as a byproduct of the papermaking process. The sterols will be used to make sitostanol which inhibit absorption of cholesterol in the gut.

{Lipid Technology November 1997, 154}

15 Automatic determination of free fatty acid content

Continuous monitoring of the free fatty acids (FFA) content of a frying oil, whether in a take-away store, restaurant or snack food factory is an essential part of process control. These days, the control analysis is often done by non-scientific personnel either on-line or as part of a continuous monitoring programme.

This patent (US 5620897-A) claims a simple process using a calibrated container (a diagram shows something resembling a squat measuring cylinder). A pre-determined weight of used fat is added, plus solvent and indicator, then titrated with alkali. The calibration is such that the result is subsequently read off the scale directly in % FFA content. The method is reported to be reliable, accurate, quick and inexpensive.
{Lipid Technology November 1997, 153}

16 Faster production of reduced-fat chocolates

A process (United States Patent US 5 599 574) for reducing the in-mould time required for the preparation of chocolate that contains low-calorie cocoa butter substitutes. The chocolate prepared using this process has acceptable gloss and has sensory properties on a par with those of chocolate prepared using traditional

processes. The process comprises the following steps : formation of an untempered chocolate composition that contains a reduced-calorie fat; heating the composition to 37.8-65.5° C to form a melt; filling of bar moulds with the untempered chocolate composition; removal of any air bubbles that are present in the composition; rapid cooling of the moulds to a temperature that is low enough to achieve a composition-mould interface temperature of <22.2° C; and holding the moulds at this temperature for 0-15 min.
{Trends in Food Science & Technology October 1997, 349}

17 Sweet ingredient for confectionery

The French are renowned for their cuisine and patisserie expertise. This French patent (FR 274025-A1) reports the production of a honey and nougat sweetener by mixing honey with toasted almonds, together with sugar and glucose syrups and egg whites. The mixture is allowed to solidify then ground to a granular state. The honey sweetener and nougat are mixed with cream, custard or butter before being used in a cake or pastry.

The process is used in the production of cakes and ice creams. Examples of products include mousses, "Arms of Venus', Charlottes and parfaits, any of which can be sold fresh or frozen. The patent claims an advantage that these products have new and unusual flavours. The use of liquid nougat enables it to be easily mixed in with other ingredients.
{ Lipid Technology November 1997, 153}

18 High-pressure preservation/storage

A method (United States Patent US 5 593 714) for the pressure preservation of foods and food ingredients. Because no heat is used, the foods retain much of their firmness and texture. The products are sterilized and preserved by the application of a pressure of 250kPa (25000 psi) for 5 days. Specifically, sea-foods require maintenance of this pressure for the duration of storage. In the case of fruit and vegetables, ripening is stopped by the pressure treatment; packaged products can be stored without refrigeration for ≥6 months.
{Trends in Food Science & Technology October 1997, 349}

19 Toxic crude can now be refined and made edible

Scientists at the Doon valley's Forest Research Institute (FRI) have developed a new process by which highly toxic crude oil derived from the seeds of *Jatropha curcas* can be refined and made non-toxic.

This oil can then be used safely by various industries and can be potentially used for edible purposes, according to scientists P.P Jain and Ravinder Singh of FRI's chemistry division who developed the refining process.

Jatropha curcas, commonly known as wild castor or *safed arand*, is a shrub usually grown for fencing purposes around agricultural fields.

It seeds profusely and the seeds are rich in kernel which yield fatty oil by solvent extraction method.

However, its oil is found to be toxic due to the presence of *phorbol(diterpene), curcin* and *curcasin* (a resinous substance).

The refined oil, produced recently on an experimental scale by FRI scientists was subjected to detailed toxicity evaluation by Sriram Institute for Industrial Research, New Delhi.

The results of the evaluation showed, no signs of toxicity.
{The Indian Express (Kochi) 2 November 1977,7}

20 Foods with fizz

Next time your jaded palate has a craving for something refreshingly different for dessert, you might like to consider a new innovation from Lynn Ogden, a food scientist at Brigham Young University in Utah. Inspired by the popularity of fizzy drinks, Ogden has been working on methods for carbonising 'semi-solid foodstuffs' - or to put it another way, making fizzy yoghurt, custard, jelly and ice cream.

The techniques (International patent application WO96/18310, European patent application 0796046) involved are quite simple, she explains; its's just a case of mixing the foodstuff in question in an atmosphere of pressurized food-grade carbon dioxide . Pressures around 90 psi at about 13° C do the job well enough, especially for yoghurt and custard. The most important factor is the shear rate of mixing - the rate at which the velocity changes through the thickness of the fluid - which must be kept low, otherwise the structure of the product breaks down and loses its creamy texture. Other methods include pumping gas and food through a pipeline together or, for yoghurt, adding solid CO_2 to the fat.

It remains to be seen if anyone actually wants to eat fizzy yoghurt or ice-cream. Of course, another way to make yoghurt fizzy is to leave it in a warm place for a couple of weeks - but that may not catch on among the health-conscious.
{Chemistry & Industry 6 October 1997, 754}

21 Milk extract can help heal wounds

Researchers in Australian University of Adelaide have extracted wound-healing substance from the left-over liquid called *whey* which remains when milk is turned into cheese. They say 1,000 litres of *whey* yields only about 30 grams of the precious powder.

The secret process for extracting the powder has been patented and a pilot plant capable of processing some 2,000 litres of *whey* a day has now been commissioned at Werribee in Victoria, the researchers said in a scientific report.

The Adelaide researchers are

working closely on the project with dairy company Bonlac and with the Highett laboratory of the Council of Scientific and Industrial Organisation's (CSIRO)'s division of Food Science and Technology in Victoria.

Dr Belford project leader, Division of Human Nurition, CSIRO says the main ingredients which make the extract work as a healing agent are a cocktail of different "growth factor" purified from the *whey*.

Growth factors are naturally occurring chemicals which promote cell growth and skin repair, he says. The purified *whey* powder also contains other substance which boost the growth factor's healing powers.
{PTI Science Service 16-30 September 1997,10}

22 Drying of noodles - uses specified conditions of humidity, temperature and air flow to reduce drying time

Drying time (JP - 188144) is shortened to 3 hours or less by (1) Within the first half of the drying time, the moisture content is reduced to approximately 20% at 40-60° C and a humidity of 30-60% RH. (2) Air flow in the drying room is adjusted so that the time necessary to reduce the moisture content to approximately 20% or less is approximately 40 min. (Preferably 20-40 min.) . (3) In the later half of the drying time, dispersion of the moisture content is promoted at the temperature 60-100° C and at a humidity of 50-80% RH in order to stabilize the quality and shorten the drying time. (4) At the last stage the drying humidity is kept between 75-85% RH for 20-60 min. by setting the temperature at 0-20° C lower than (3) in order to adjust the difference of moisture inside and outside of the noodles. (5) The temperature of the product is lowered to room temperature without changing the moisture of the noodles, keeping the humidity of the atmosphere at 75-85% RH.

Use - To efficiently obtain dried noodles of good quality.

Advantage - Drying time is reduced whilst maintaining noodle quality.
{Food Control 8(4), 1997, 213}

23 Removal of cholesterol from milkfat using continuous supercritical fluid

The cholesterol content of anhydrous milk fat (AMF) was reduced by passing supercritical carbon dioxide through an adsorption column with magnesium silicate at 40° C and 241 bar. The breakthrough quantity for 76% cholesterol reduction was 2.0 g of fat per gram of adsorbent. With in-line adsorption on magnesium silicate, the cholesterol reduction in the extracts was 80-86%.

For further details, contact : S.S.H. Rizvi, Dept. of Food Science, Cornell University, Ithaca, NY 14853, USA.
{Lipid Techmology Newsletter December 1996, 116}

24 Microencapsulation of core materials, e.g. food ingredients, cosmetics, etc. - in a wall system comprising whey protein, such as whey protein isolate or concentrate

Microencapsulation of volatile or non-volatile core material in a wall system (which comprises: (a) preparing the wall system using whey protein; (b) mixing a core system with the wall system; (c) dispersing the core system in the wall system to form an emulsion and/or dispersion; (d) microencapsulating the emulsion and/or dispersion; and (e) harvesting a microencapsulated prod.

Prep. the whey protein is selected from whey protein isolate, whey protein concentrate, β-lactoglobulin, α-lactalbumin, a mixture of these, a modified or denatured whey protein, or a fraction of this. The wall system also comprises other wall constituents which possess microencapsulating properties (such as proteins, natural gums, modified gums or starches), wall constituents which do not possess microencapsulating properties (such as carbohydrates or opt.partially hydrolysed starch) and additives (such as emulsifiers, anitoxidants, plasticisers and fillers). The core system is selected from fats, volatile cpds., vitamins, essential oils and aroma cpds. The whey proteins present in a concentration of 10-40%. The core is present in a load concentration of 25-75%. The microencapsulating step (d) is spray-drying. The drying temperature during microencapsulation is 105-210° C at inlet air and 50-140° C at outlet air or a spray-dryer.

Use - The process is useful for microencapsulation of, e.g. food ingredients, volatiles, vitamins, fragrances, nutritional cpds., natural colourants and oleoresins, flavours, fats, oils, pharmaceuticals, cosmetics or cosmetic ingredients.

Advantage - The whey protein is safe to use. It provides good retention of volatiles. The prods. of the process exhibit high stability and are easy to handle and store. The process is economical as it uses waste prods. from cheese prodn. and does not require special equipment.
{Food Control 8(4), 1997,214}

25 Microwave tunnel oven for industrial biscuit making - has oven side walls and roof and electrically conductive product supporting conveyor band moving through area radiated by microwave emitters

A microwave tunnel oven for subjecting products conveyed through the oven to microwave radiation (US - 109350) comprising a tunnel oven casing, the oven casing comprising spaced apart tunnel oven side-walls and an oven roof connecting the side-walls, an electrically conductive product supporting conveyor band positioned between the side-walls and beneath the roof to extend lengthwise of the tunnel, band drive means operative to drive the band, a

microwave generator means, a microwave applictor positioned between the side-walls and above the band, microwave supply means connecting the generator means to applicator, the applicator comprising an elongate microwave emitter assembly extending transversely of the oven band, microwave launch means extending longitudinally of the oven and above the band from adjacent to the emitter assembly, the emitter assembly comprising a feeder wave-guide extending transversely of the oven band, and a plurality of spaced-apart slots in the feeder waveguide, the slots facing longitudinally of the oven for emitting radiation into the oven generally in a longitudinal direction of the oven with a plane of polarisation substantially perpendicular to the oven band, at least a portion of the launch means and the band defining therebetween a microwave treatment space through which the prods. are conveyed in use for being sujected to microwave radiation, the launch means being configured to maintain the polarisation of the radiation in the treatment space substantially perpendicular to the oven band, the microwave launch means comprising; as viewed in longitudinal vertical section of the oven, a first stage positioned adjacent to the feeder waveguide and a second stage remote from the feeder waveguide, the first stage comprising upper and lower first stage plates disposed above and below respectively the slots and extending generally longitudinally of the oven from the feeder waveguide, the second stage comprising a panel extending closer to the band in proceeding away from the first stage, the upper first stage plate meeting the second stage panel at a junction there between, and the upper and lower first stage plates as viewed in longitudinal vertical section of the oven, being essentially mirror images of each other about a longitudinal plane that extends symmetrically through the plurality of slots and parallel to the band.

{Food Control 8(4),1997,212}

26 Egg testing probe having improved reproducibility - has excitation member retained in end of tube by magnetic field for free vibration parallel to tube centreline

An egg testing probe (EP 738888-A1) has a tubular body with an excitation member retained by a magnetic field adjacent to one end and free to vibrate parallel to the probe centreline. Also claimed are: (1) an egg-testing device comprising a probe; a fixedly-mounted microphone to receive sound-waves generated by the excitation member in an air column within the probe tube; and a housing wherein the probe is bearing-mounted so as to be axially displaceable; (2) a testing apparatus comprising an egg-testing device and a diameter-measuring device; (3) a method for examining an egg for the presence of ruptures and/or cracks, where a measuring signal is provided by a probe, the signal is compared with a predetermined threshold value(I_d), wherein it is counted how often the measuring signal exceeds the threshold value, wherein the count value (N) is compared with a predetermined threshold value(N_{min}) and wherein the egg is approved if $N>N_{min}$; and (4) a method for examining an egg for the

presence of ruptures and/or cracks, where a measuring signal is provided by a probe, the signal is compared with a predetermined threshold value (I_d), wherein a point of time (T_l), associated with the last time that the measuring signal exceeds I_d, is compared with a predetermined threshold value (T_{min}), and wherein the egg is approved if $T_l > T_{min}$.

Use - Used for testing eggs for cracks, ruptures or other defects.

Advantage - Provides improved reproductibility, is of simplified design and is easy to clean.
{Food Control 8(4), 1997,211}

27 Electro-heating food products especially liquid egg product for pasteurisastion or sterilisation - by applying alternative current to food as it passes through electroheating zone defined between pairs of electrodes spaced from barrier contacting food

A method of electro-heating a food product (GB 2282052-A) comprises; continuously supplying a food product to be heated; passing the food product in a direction through an electro-heating zone in an electro-heating cell defined between at least one pair of spaced electrode assemblies, each of the electrode assemblies comprising an electrode, a porous barrier having a high degree of mechanical and thermal stability to withstand pressure differentials and long term elevated temps., and an electrolyte, where the electrolyte is located in a gap between the electrode and the barrier, and where the food product is in direct contact with the barrier and in electrical contact with the electrolyte through the pores of the porous barrier, the electrode in physical contact with the electrolyte but not with the food product; and applying continuous alternating electrical energy having a frequency of 50 Hz to 99 kHz and having a current density between the electrode assemblies which is in a direction other than the direction of food flow across the electrodes and through the food product to electro-heat the food product to a first temperature sufficient to at least pasteurize the food product without significant electrolysis in the food product.
{Food Control 8(4), 1997,211}

28 Supercritical CO_2 extraction of carotenes from carrots

A maximum of 99.5% of beta-carotene was extracted from carrot pulp (press cake) using 10% ethanol co-solvent in supercritical carbon dioxide. The concentration of ethanol and the temperature were the most important factors in increasing extraction yield.

For further details, contact: P.J. Vega et al., Food Science & Human Nutrition Department, University of Florida, Gainesville, FL 32611, USA.
{Lipid Technology Newsletter December 1996,116}

29 Fish oil deodorisation

Fish oil can be deodorised and protected from developing fish odours by bubbling air through the oil at 15-60° C for 1-150 hours and with a flow rate equivalent to 5-20 ml of oxygen per minute per kg of oil. The oil is subsequently processed by vacuum steam distillation.
{Lipid Technology Newsletter December 1996, 106}

30 Hydrogenation of vegetable oils

By performing the reaction in two, instead of three phases, a process being developed at the Department of Food Science, Chalmers University of Technology (Goteborg, Sweden) increases the rate of hydrogenation of vegetable oils by over 1000 times. As a result, the size of the reaction and associated equipment required is less than 1/10th that of conventional autoclaves, reducing the cost by at least 25%.

A mixture of hydrogen, oil and propane at 70-200° C is fed to a fixed bed reactor filled with conventional Ni-or Pd-on-carbon catalyst. At pressures between 30 and 100 bars, hydrogenation occurs in less than a second. After the pressure is released the hardened oil separates. The process reduces the trans-fatty acid content to below 5%, well below the 40% achieved by traditional methods. Both oil and H_2 are soluble in propane under supercritical conditions. The reaction rate is increased because unlimited H_2 is available for the reaction and the catalyst pores are not filled with stagnant liquid. By the end of the year tests will begin on a 10-ml/min. pilot reactor.
{Chemical Engineering July 1997, 25}

31 Supercritical CO_2 tea decaffeination

A process (German Federal Republic Patent Application DE 195 24 481 A1) for the decaffeination of black tea with supercritical CO_2, in which the extract is selectively freed from caffeine by the reduction of pressure. Because the loss of flavour and aroma compounds from the tea is only slight, the sensory quality of the decaffeinated product is excellent.
{Trends in Food Science and Technology September 1997, 317}

32 Shelf life of dairy products

A new method of increasing the shelf life of dairy products has been introduced by Praxair, the world's largest supplier of carbon dioxide. The cost-effective process using carbon (CO_2) can be beneficial to all dairy products - fluid milk, raw milk for hard cheeses, yogurt, cottage cheese, ricotta cheese, and ice cream.

CO_2 inhibits the growth of many bacteria, yeasts and moulds that spoil dairy products. It minimizes curdling and displaces oxygen which also causes spoilage. At the same time, it protects taste and texture, reduces or eliminates the need for artificial preservatives, and does not have to be listed on the ingredient panel. Dairies can deliver their products over longer distances and buy-back volumes can be reduced because of extended code dates.

Two years ago, Praxair's research and development team at the Chicago Technology Centre began building on research done at Cornell University to develop a process for adding CO_2 into cottage cheese. The key was to arrive at the level of carbon dioxide that gives the most shelf life without affecting taste or smell. CO_2 is injected directly into the cream dressing before it is mixed with the cheese curd. The product is then barrier-packaged to prevent the gas from escaping.

It was found that the shelf life of the cottage cheese could be doubled. Before this new technology, typical shelf life for cottage cheese was 14 to 21 days.

The process has been applied successfully to ice cream mix and ricotta cheese. It could also be extended to modified-atmosphere packaging for shredded cheese packages, spray drying for dry milk powders, raw-material inerting, and water treatment.
{Food in Canada September 1997,13}

BY PRODUCTS AND WASTE UTILIZATION

33 Fuel from vegetable waste

Researchers at the Centre for Biochemical Technology (CBT) in Delhi have developed an indigenous and eco-friendly technology to recycle vegetable wastes into bioenergy.

The highly efficient technique can not only reduce the mounting garbage heaps that pollute the city but also leads to the generation of energy rich fuel.

In the easy-to-operate technique, vegetable wastes are first solubilised into a slurry. The slurry is then subjected to fermentation and anaerobic digestion in the presence of methane producing bacteria which convert the waste into gas and an effluent.

"Nearly 70 per cent of the gas obtained is methane which can be used as bio-gas fuel", says Dr V.C. Kalia, the project incharge.

The nutrient-rich, odourless effluent can be used as fertiliser and as an animal feed.
{P.T.I Science Service 16(22), 1997,2}

34 Pectin from lemon peels

Scientists at the Bhaba Atomic Research Centre (BARC), Mumbai, have developed an indigenous technology to produce from lemon peels pectin, an essential ingredient for food industry that is currently being imported to meet the requirements. The BARC technology for pectin will not only help satisfy the ever increasing market demand for the product but also save precious foreign exchange spent on its import.

Pectin, a purified carbohydrate that consists chiefly of partially methoxylated polygalacturonic acid is

required as a thickening agent in the preparation of jams, jellies, marmalades and salad dressings. It is also used in pharmaceutical preparations and as a replacement for fat.

Indian cuisine industry's requirement for pectin is estimated to be around 300 tonnes per annum but indigenous production is only about 25 tonnes.

The two most important sources of pectin in advanced countries are the inner portion of the rind of citrus fruits and apple pomace. Other good sources of pectin are sunflower seeds, guava and peels of mango and orange.

Since Maharastra has a high yield of guava, mango, orange and lemon, the wastes from the processing units of these fruits can be economically exploited by this new technology to obtain pectin of high quality.
{PTI Science Service 16(20), 1997, 4}

EQUIPMENT AND MACHINERY

35 Moisture/solids analyser

The MAX-2000, measures the moisture content in food products such as: cereal, baked goods, pastas, fruits, vegetables, dairy products, candies, and other raw and unfinished items. It detects moisture levels from ppm to 100%-and accommodates sample weights of 150 mg to 40 g. Features include graphical user interface, statistical analysis package, bi-directional PC communication for use with lab QC programs, test parameter storage, storage of 122 test results, self-calibration, and security system access code.

For more imformation, contact Arizona Instrument, 4114 East Wood St., Phoenix, AZ 85040-1941
{Food Technology September 1997, 86}

36 Moisture meter

Lunkad Enterprises offers a portable agricultural moisture meter used for measuring moisture content in cereals, pulses, oilseeds, spices, tea, coffee and cashew. It incorporates the latest microprocessor technology and improved advance electronic circuit to give a fast thirty-second digital readout. There is no need to weigh the sample or to adjust the results for temperature. The meter has been evaluated by Central Institute of Agricultural Engineering (ICAR), Bhopal.

For further information contact: Lunkad Enterprises, 99 Old Prabhadevi Road, Mumbai 400 025
{Industrial Products Finder October 1997,158}

37 Moisture meter

Zeltex,Inc, a leading manufacturer of Near-IR analysers, has announced availablity of its improved benchtop KJT-200 Moisture Meter for analysing chemicals, pharmaceuticals and foods, including grains. Twelve inches high and less than 20 lbs, the KJT-200 uses near-infrared reflectance principles of spectrum analysis to measure moisture in diverse materials

including adhesives, cellulose, plastics, liquids, grains, etc, from 0.05% to 45%. A typical lab accurate analysis can be performed in seconds using the KJT-200's internal microprocessor without contacting or destroying the product. The KJT-200's fast sampling speed provides for the measurement of moisture absorption rate in extremely hygroscopic materials. Data can be transmitted via RS-232C port to a printer or computer for statistical analysis. Automatic measurement starts when a sample is placed on the turntable and an automatic zero adjustment and rotating turntable assure accuracy over the entire sample.

For further information write to: Zeltex,Inc, 130 Western Maryland Parkway, Hagerstown, MD 21740, U.S.A.
{Industrial Products Finder November 1997, 65}

38 Infrared moisture balance

Toshniwal Infrared Moisture Balance is a reliable and sturdy instrument for an accurate determination of the moisture contents of materials which do not undergo chemical change when exposed to infrared radiation. Since drying and weighing of the samples is done simultaneously, the instruments is specially useful for substances which quickly re-absorb moisture after drying. Observations can be taken quickly and the results obtained are accurate. The instrument is suitable for a reliable determination of moisture contents of agricultural soils, foods, chemicals, plastics, pharmaceuticals, construction soils and other similar materials. The balance consists of a 250 watt infrared lamp, a sensitive torsion balance and solid state control unit all housed in a compact cabinet mode of solid cast aluminium, having robust design. The infrared radiation from the lamp is used for heating the sample. The temperature is controlled by solid state device. The instrument is directly calibrated in percentage of moisture between 0% and 100%. Thermometer is provided to monitor the temperature near the test material.

For more details write to : Toshniwal Brothers (Delhi) Pvt Ltd, 3E/8 Jhandewalan Extn, New Delhi 110 055.
{Chemical Products Finder September 1997,6}

39 Vegetable processing systems

Hughes Company Inc, USA, manufactures a wide range of vegetable processing equipment. They include: inspection tables, air separators, water deluge chillers, de-watering shaker, maximiser husker rolls, and SS steam injection systems for various applications in the food industry. Hughes also offers systems for vegetable washing, cutting, chopping, snipping, rinsing, blanching, and de-stalking.

For further information write to: Impetus Incorporated, K-56/4, Sri Krishna Apts, Annanagar East, Chennai 600 102.
{Industrial Products Finder August 1997,5}

40 Processing of root crop vegetables/fruits

Magnuson Corporation, USA, specialises in the field of washing, and scrubbing technology for root crops and vegetables. Its Shufflo systems find applications in feeding and cutting of root crops and soft fruits. The company's Hydrout coring and trimming machines find applications for processing of items like cabbage, and pineapple.

For further information write to: Impetus Incorporated, K-56/4, Sri Krishna Apts, Annanagar East, Chennai 600 102.

{Industrial Products Finder August 1997, 43}

41 Honey processing plant

In developed countries, highly sophisticated units have been invented to reduce moisture from honey or complete dehydration to get powdered honey. However, these moisture reduction methods involve drastic changes in treatment and handling. Treated honey, thus loses many of its natural ingredients and properties and are generally used as industrial honey. All these units have been designed to handle more than 1,000 to 2,000 kg per hour at high cost, Mr. D.M.Wakhle, Development Officer, Central Bee Research and Training Institute, (CBRTI) Pune, has said.

Talking to *Business Line*, he pointed out that a simpler and low capacity unit was a necessity in developing countries.

For this purpose, he said a honey processing-cum-moisture reduction unit had been designed, fabricated and tested at the CBRTI. The unit, first of its kind in the world, had processing capacity of one lakh kg per year.

The institute has also developed and fabricated honey processing plants of medium (50,000 kg per year) and small (20,000 kg per year) capacities. Reduction of three to five per cent has been achieved by the unit and by controlling the rate of honey flow and temperature in the heat exchangers, higher moisture reduction of seven per cent could also be achieved.

He said the honey processing-cum-moisture reduction unit has a falling film evaporator, condensor, condensate collector and a vacuum pump.

Raw honey after being pre-heated at 40-45 degree Celsius is filtered through 80 micro meter polypropylene micro filter under pressure using positive displacement type metering pump. The pre-heated and filtered honey is then passed through heat exchanger and heated to 60 to 65 degree Celsius to destroy honey fermenting yeast cells.

The processed honey is then taken to the feeding tank and passed through heat exchanger having falling film tubes to expose thin film of honey for evaporation of moisture at 60 degree Celsius. The use of falling film evaporator under vacuum facilitated removal of water at relatively low temperatures.

The water vapour produced in this process was immediately removed out of the surrounding atmosphere

facilitating further evaporation and reabsorption of water into the honey, he said.

Having treated at low temperature, enzyme content and other natural volatile ingredients were retained and quality of honey was also not impaired, he added.
{Business Line 4 December 1997,13}

42 Spice-powdering plant

Finex has introduced spice-powdering plants in 1-3 tonnes/hr capacities. Consisting of six sections - pre-cleaning (with fumigation, if necessary), cleaning, drying, milling, blending and packing (automatic form-fill-seal machine), the plant gives a spice powder yield of 85 per cent. Cryogenic cold-grinding spice plants are also offered.

For more details write to: Finex Sieves Pvt Ltd, 606 GIDC, Makarpura, Vadodara, Gujarat 390 010.
{Chemical Products Finder October 1997,10}

43 High tech bread oven

A leading French manufacturer of equipment for bakeries in Europe which makes and sells two kinds of ovens: conventional with rotating carriages for baking baguettes and doughnuts and radiating hearth ovens for special breads and pastries in 1993, decided to modernise the bread ovens for traditional bakeries. For this, it formed a team along with a research facility of the French Atomic Energy Commission, to develop a new oven, according to a report from France.

They aimed at improving the internal ventilation of hot air in the baking chamber of the oven; improving oven efficiency; and optimising the steam injection system. The engineers first modelled the air flow and temperature within the chamber that took into account the rotating carriage. Trials were conducted on a test platform which helped define friction coefficients between the hot gases, carriage structure and its load of uncooked dough according to the angle of rotation.

Thanks to modelling, the hot air injectors and air outlets were set up in an optimum arangement in the new oven. The modelling also showed that it was possible to increase the yield. It was easy to increase the number of trays on the carriage from 18 to 20, thereby raising the productivity by 10 per cent.

Moreover, the hot air extracted from the baking chamber is re-heated through a heat exchanger before the injectors re-inject the hot air back into the chamber. The smoke from a burner passes through the second loop of the exchanger. To improve the thermal efficiency of the oven, the engineers modelled the exchanger to optimise its shape and increase its efficiency.

The water injected into the oven chamber has to be immediately turned into steam when the baking starts so that a golden crust forms on the bread.

For this, they designed a steam generating device. Parametric calculations were drawn up to evaluate the impact of various parameters such as the nature of the materials in the energy storage, the geometrical shape of the materials heated to over 200 and the kinetics of the re-heating stage between two baking batches.

Energy burnup in this kind of oven can be lowered by about 8 per cent with insulation and the installation of a mist evacuation system (which requires just a valve) and a door with triple glazing. A built-in electronic control means that baking can be programmed for an entire week. The glass and stainless steel oven is 2.5 m high and has a very bright LCD graphic screen.
{The Hindu , 9 October 1997,25}

PACKAGING

44 Biodegradable polythene

A biodegradable polythene material has been developed which could have a potential impact on the packaging industry. "Granules made of 40 per cent starch and 60 per cent virgin ethylene based LDPE have been found to be extrudable and mouldable. Film produced with this composite material has been found to have adequate mechanical strength", food processing industry secretary Ashok Parthasarathi told in a conference here yesterday. The material could be produced in various forms, he told the international conference on packaging for agro-products. "Most importantly, the new biodegradable plastic takes only two months under soil burial for complete bio-degration", he said. The National Research Development Centre is in possession of the process and a pilot plant is being set up. If the material is accepted, it would have a major effect on the tapioca industry in the country, Parthasarathi added.
{Business Standard 27 November 1997,4}

45 Self-chilling cans soon

By next year drinkers will be able to push a button on a can and have it thoroughly chilled within two minutes.

The new self-chilling can is being developed by BOC gases in collaboration with California's privately owned Joseph company which specialises in self-chilling technology, says a recent British news report. The principle on which the chill can works is that low pressure carbon dioxide, which acts as a coolant, is held in the heat exchangers in the inner compartment of the can.

The drinker simply pushes a button on the can to start the chilling process, the report said. BOC claims that its patented cooling system will not increase global warming as the carbon dioxide is obtained by re-cycling from industrial processes.
{Business Standard 14 November 1997,5}

ANALYSIS

46 Test for yeast and mold

Idexx Laboratories, Inc., introduces a new test for detecting and

quantifying the concentration of yeasts and molds in beverages and foods. The new test, SimPlate Yeast and Mold, delivers total yeast and mold counts in just 48 hours compared to 5 days with traditional methods. Faster results speed up the quality control process and allow product to move more quickly through processing and into distribution. And since SimPlate is easy to use and read, technicians can increase testing volume without sacrificing accuracy.

SimPlate for Yeast and Mold, an enzyme-based test, is performed by mixing dehydrated medium powder with sterile water, adding the medium and the sample to a disposable SimPlate device, and incubating it for 48 hours at 30° C. No membrane filters, filtration units, clamping devices, enzyme digestors, pH adjustments, or antibiotics are needed. After incubation, wells containing yeasts or molds produce a blue fluorescence and are easy to count without a colony counter, so results are consistent between technicians and across multiple plants. The test can also be incubated at 25° C for 72 hours, which gives flexibility in managing the weekend schedule.
{Dairy, Food and Environmental Sanitation, June 1997,370}

47 Scientists isolate "hot zone" of chilli pepper

US researchers at the University of California, San Francisco, have discovered why a burning pain explodes in the mouth after taking a bite of small piece of chilli pepper, according to a journal. The discovery may open research into development of new drugs for pain relief, a recent report in the international science journal Nature said.

"When you bite into chilli pepper, you feel burning hot because of a chemical called 'capsaicin' present in it that acts on the neuronal cells on the surface of the tongue", the report said.. David Julius and his team identified and cloned this chemical receptor that 'capsaican' latches onto, it said.

"It so happens that the receptor that transmits the sensation of spicy hotness to the brain is the same one that also gets activated by a rapid rise in temperature for example, while drinking a cup of unbearably hot coffee. Both painful sensations are passed on to the brain by the 'capsaicin' receptor" it said.

This receptor is a protein that sits in the fatty membrane of the nerve cells. When activated, it allows an influx of calcium and sodium ions into the cell initiating a nerve impulse to the brain which a person perceives as heat of painful intensity, the report said.

The receptor appears to be responsible for signalling the pain that results from physical injury. This single sensory receptor may be involved in all three forms of pain stimulus - chemical, thermal and mechanical. Therefore, scientists consider the discovery very important, the journal said.

In an accompanying report in *Nature* David Clapham of Harvard

Medical School says isolation of 'capsaicin' receptor will lead to search for new pain killing substances that act by blocking and neutralising the receptor thereby providing relief to patients suffering from arthritis, diabetics, neuropathy and spinal-cord injury.
{P.T.I Science Service 16(22) 1997,13}

48 *E.coli* detection

Method and medium for use in detecting *Escherichia coli* and total coliforms. Describes (U.S. patent 5,650,290) a selective culture medium which permits simultaneous detection of total coliform and *E.coli* in a test sample with a single growth incubation period. The culture medium includes the required nutrients for growth of coliforms, a bactericidal system selective for non-coliform bacteria, and an indicator selectively metabolized by *E.coli*.
{Food Technology September 1997, 86}

49 Butter spreads the secret of long life

Why does cream go rancid more quickly than butter ? Researchers in Norwich think they have the answer, and it comes down to the structure of the food, not its chemical composition- a finding that could help to rid some processed foods of chemical preservatives.

Cream and butter contain pretty much the same substances, so why cream should sour much more quickly has been a mystery. Both are emulsions- tiny globules of one liquid evenly distributed throughout another. The difference lies in what's in the globules and what's in the surrounding liquid, says Tim Brocklehurst of the Institute of Food Research, who led the investigation.

In cream, fatty globules drift about in a sea of water. In butter, globules of a watery solution are locked away in a sea of fat. Brocklehurst says that the bacteria which make the food go rancid - such as *Pseudomonas* - prefer to live in the watery regions of the mixture, which contain the milk proteins and lactose sugar on which they feed. "This means that in cream, the bacteria are free to grow throughout the mixture," he says.

When the situation is reversed, the water dwelling bacteria are locked away in compartments buried deep in the sea of fat. Imprisoned in this way, individual colonies cannot spread and rapidly run out of nutrients. They also slowly poison themselves with their waste products, such as acetic and lactic acids. "In butter, you get a self-limiting system which stops the bacteria growing," says Brocklehurst.

The researchers are already working with food companies keen to see if their products can be made resistant to bacterial attack through subtle alterations to the food's structure. Brocklehurst believes it will be possible to make the emulsions used in salad dressings, for instance, more like that in butter. The key will be to do this while keeping the dressing liquid and not turning it into a solid lump.
{New Scientist , 1 November 1997,25}

COMMERCIAL INTELLIGENCE

PRODUCTION (Raw Materials)

50 Production of major oilseeds in India

	Area (1,000 hectares)	Production (1,000 metric tons)	Yield (metric tons per hectare)
Sunflower			
1982	462	230	0.50
1987	1,651	635	0.38
1992	2,093	1,185	0.57
1993	2,677	1,400	0.52
1994	1,970	1,204	0.61
1995	2,170	1,400	0.65
1996	2,200	1,450	0.66
Soybeans			
1982	770	491	0.64
1987	1,543	898	0.58
1992	3,627	3,106	0.86
1993	4,284	4,000	0.93
1994	3,993	3,300	0.83
1995	4,800	4,000	0.83
1996	5,000	3,800	0.76
Rapeseed			
1982	–	–	–
1987	4,619	3,455	0.75
1992	6,305	4,872	0.77
1993	6,296	5,390	0.86
1994	6,230	5,884	0.94
1995	6,400	6,000	0.94
1996	6,400	6,300	0.98
Peanuts			
1982	7,215	5,282	0.73
1987	6,844	5,854	0.86
1992	8,351	8,854	1.06
1993	8,379	7,760	0.93
1994	7,922	8,255	1.04
1995	7,800	7,400	0.95
1996	8,000	8,000	1.00

{INFORM 8(8),1997,826}

51 Production - Walnuts in-shell basis

Figures in 1,000 t	1993	1994	1995	1995 % of world production
Chile	10	9	10	1.0
China	192	210	215	21.3
France	19	27	21	2.1
Greece	24	22	22	2.2
Hungary	8	8	8	0.8
India	22	28	24	2.4
Mexico	10	15	15	1.5
Russia	32	30	32	3.2
Spain	9	9	9	0.9
Turkey	115	112	115	11.4
Ukraine	77	57	76	7.5
USA (California)	236	210	212	21.0
Other countries	910	249	251	24.7
World total	1,664	986	1,010	100.0

{Statistical supplement - Fruit World International 4, 1997}

52 Production: Cashew nuts in-shell basis

Figures in 1,000t	1993	1994	1995	1995 % of world production
Brazil	77	126	164	24.2
Guinea-Bissau	28	35	35	5.2
India	150	150	150	22.1
Kenya	15	15	15	2.2
Malaysia	12	12	12	1.8
Mozambique	24	23	30	4.4
Nigeria	25	25	25	3.7
Tanzania	42	46	48	7.1
Thailand	15	20	20	2.9
Vietnam	60	78	80	11.8
Other countries	93	99	99	14.6
World total	541	629	678	100.0

{Statistical supplement - Fruit World International 4, 1997}

53 Production: Groundnuts in-shell basis

Figures in 1,000 t	1991	1992	1993	1994	1995	1995 % of world production
Argentina	429	320	330	300	339	1.2
Burkina Faso	152	110	113	113	203	0.7
Brazil	140	170	151	159	168	0.6
China	6,060	5,580	8,496	9,718	10,316	36.9
India	7,000	8,200	7,626	8,400	7,100	25.4
Indonesia	920	1,037	1,068	1,080	903	3.2
Mexico	--	91	116	114	80	0.3
Nigeria	1,219	1,214	1,170	1,200	1,502	5.4
Senegal	700	578	628	678	791	2.8
Sudan	193	454	428	810	630	2.3
USA	2,242	1,943	1,539	1,936	1,578	5.6
Vietnam	212	215	242	275	305	1.1
Zaire	435	440	604	550	581	2.1
Other countries	3,664	3,245	3,195	3,160	3,494	12.4
World total	23,366	23,506	25,706	28,493	27,990	100.0

{Statistical supplement - Fruit World International 4, 1997}

54 Production: Sunflower

Figures in 1,000 t	1993	1994	1995	1995 % of world production
Argentina	2.9	4.1	5.5	21.0
China	1.3	1.4	1.3	5.0
France	1.6	2.0	1.9	7.3
India	1.4	1.3	1.5	5.7
Russia	2.8	2.5	4.2	16.0
Turkey	0.8	0.7	0.9	3.4
Ukraine	2.0	1.7	2.9	11.1
USA	1.2	2.2	1.8	6.9
Other countries	6.0	6.2	6.2	23.6
World total	20.0	22.1	26.2	100.0

{Statistical supplement - Fruit World International 4, 1997}

55 **Urdbean production**

Table 4. Area ('000 ha) and production ('000 tonnes) of urdbeanduring different plan periods (average)

States	Y_1	Y_2	Y_3	Y_4	Y_5
Andhra Pradesh					
A	193	197	224	395	522
P	84	79	127	318	308
Bihar					
A	103	108	114	100	86
P	44	41	5	51	46
Karnataka					
A	57	49	57	79	105
P	16	12	61	27	45
Maharashtra					
A	420	151	478	451	464
P	103	57	137	185	236
Madhya Pradesh					
A	644	655	654	670	581
P	153	155	19	172	169
Rajasthan					
A	65	108	153	154	158
P	25	38	65	35	49
Tamil Nadu					
A	119	132	195	190	336
P	36	45	52	120	144
Uttar Pradesh					
A	153	136	201	240	290
P	50	45	54	77	121
West Bengal					
A	170	165	116	106	124
P	72	76	55	57	74

A, Area; P, production

Y_1, 1969–74; Y_2, 1974–80; Y_3, 1980–85; Y_4, 1985–90; Y_5, 1990–95

{Indian Farming October 1997,37}

56 Pigeonpea production

Area ('000 ha) and production ('000 tonnes)

State	Y_1	Y_2	Y_3	Y_4	Y_5	Y_6	Y_7
Andhra Pradesh							
A	179	190	199	245	312	320	359
P	78	53	39	59	71	95	138
Bihar							
A	166	134	97	86	75	70	127
P	139	108	71	93	88	79	75
Gujarat							
A	92	89	116	281	333	399	457
P	43	41	59	194	210	309	440
Karnataka							
A	270	284	313	352	461	415	445
P	97	132	189	166	183	141	220
Maharashtra							
A	570	509	647	716	829	1 026	1 040
P	304	287	372	431	533	530	709
Madhya Pradesh							
A	446	510	502	514	453	422	411
P	260	384	338	408	451	381	342
Orissa							
A	35	47	60	110	114	166	163
P	20	26	29	77	111	131	106
Rajasthan							
A	30	30	36	32	22	24	35
P	12	14	13	13	10	12	23
Tamil Nadu							
A	54	81	76	105	125	117	141
P	21	36	41	50	93	65	122
Uttar Pradesh							
A	640	544	527	513	506	511	498
P	767	634	680	698	655	549	525
West Bengal							
A	40	25	26	23	8	5	11
P	31	21	24	20	8	3	19
All-India							
A	2 572	2 550	2 608	3 030	3 350	3 528	3 767
P	1 664	1 748	1 873	2 270	2 492	2 340	2 792

A, Area; P, production
Y_1, 1964–69; Y_2, 1969–74; Y_3, 1974–80; Y_4, 1980–85; Y_5, 1985–90; Y_6, 1990–95; Y_7, 1996–97

{Indian Farming October 1997,37}

57 Mungbean production

Area ('000 ha) and production ('000 tonnes)

States	Y_1	Y_2	Y_3	Y_4	Y_5
Andhra Pradesh					
A	483	485	569	498	516
P	127	134	209	186	195
Bihar					
A	82	138	169	202	207
P	28	49	51	104	120
Karnataka					
A	84	118	170	218	254
P	24	38	51	66	91
Maharashtra					
A	406	533	502	648	755
P	89	156	143	256	366
Madhya Pradesh					
A	221	230	230	187	145
P	59	59	62	52	44
Orissa					
A	349	497	609	664	511
P	183	224	341	339	243
Rajasthan					
A	269	276	227	254	386
P	77	51	45	49	100
Tamil Nadu					
A	91	87	91	115	136
P	28	29	23	40	57
Uttar Pradesh					
A	13	31	148	129	100
P	3	10	57	51	49
West Bengal					
A	17	25	31	25	14
P	6	10	18	13	6
Punjab					
A	6	4	26	44	50
P	3	2	21	34	41
Haryana					
A	14	10	6	7	8
P	6	5	4	4	4

A, Area; P, production
Y_1, 1969–74; Y_2, 1974–80; Y_3, 1980–85; Y_4, 1985–90; Y_5, 1990–95

{Indian Farming October 1997,36}

58 Chickpea production

Area ('000 ha) and production ('000 tonnes)

State	1964–69	1969–74	1974–80	1980–85	1985–90	1990–95	1996–97 F*
Andhra Pradesh							
A	74	69	68	52	55	86	97
P	21	22	24	19	22	57	69
Bihar							
A	402	249	224	184	175	140	141
P	262	150	135	142	115	137	144
Gujarat							
A	55	49	65	109	72	122	159
P	28	37	49	91	42	82	78
Haryana							
A	1 062	1 037	934	712	548	429	362
P	715	712	733	338	414	355	316
Karnataka							
A	153	169	167	163	216	272	398
P	61	62	67	68	78	117	192
Maharashtra							
A	359	165	447	466	574	628	750
P	104	104	156	178	256	365	488
Madhya Pradesh							
A	1 566	1 664	1 911	2 035	2 240	2 387	2 684
P	816	1 012	1 047	1 321	1 490	1 932	2 476
Punjab							
A	617	363	323	165	82	30	18
P	475	309	278	89	63	32	17
Rajasthan							
A	1 208	1 449	1 860	1 658	1 292	1 292	1 556
P	619	876	1 247	1 098	907	920	1 303
Uttar Pradesh							
A	2 502	2 041	1 659	1 461	1 409	1 082	968
P	1 626	1 478	1 114	1 239	1 150	942	850
All-India							
A	8 052	7 646	7 666	7 184	6 768	6 690	7 223
P	4 780	4 894	4 971	4 714	4 660	5 064	6 008

A, Area; P, production
*As on 16 June 1997

{Indian Farming October 1997,35}

PRODUCTION (Industrial)

59 Production of coffee

Year	Arabica	%	Robusta	%	Total (in tonnes)
1950-51	15,511	82	3,382	18	18,893
1960-61	39,526	58	28,643	42	68,169
1970-71	58,348	53	51,883	47	110,231
1980-81	61,262	52	57,284	48	118,646
1990-91	78,311	48	91,415	52	169,726
1991-92	88,320	49	91,680	51	180,000
1992-93	73,120	43	96,275	57	169,395
1993-94	88,500	43	119,500	57	208,000
1994-95	79,000	44	101,100	56	180,100
1995-96	103,250	46	119,750	54	223,000
1996-97	90,450	44	114,550	56	205,000
1997-98	104,205	44	133,010	56	237,215

* – Pre-Blossom estimates.
Source: Coffee Board

{The Hindu Survey of Indian Industry 1997,421}

60 USDA World coffee output estimates

Country	1996-97 output Dec. estimate (1000 bags*)	1997-98 output June estimate (1000 bags*)	1997-98 output Dec. estimate (1000 bags*)
Brazil	28,000	28,000	26,000
Colombia	10,779	N/A	12,000
Indonesia	7,900	N/A	7,100
Mexico	5,300	N/A	5,500
Ivory Coast	4,667	N/A	4,200
Guatemala	4,275	N/A	4,280
Honduras	2,279	2,580	2,465
Vietnam	5,033	5,000	5,800
Uganda	4,350	N/A	4,000
India	3,417	N/A	4,000
Costa Rica	2,376	N/A	2,455
El Salvador	2,498	N/A	2,378
World	102,665	N/A	102,619

* Each bag weighs 60 kg

{Business Line 22 December 1997,11}

61 Production of technical grade pesticides in India

Units : Tonnes

S. No.	Product Name	Ins. Cap.	PRODUCTION			
			92-93	93-94	94-95	95-95
TECHNICAL PESTICIDES / INSECTICIDES						
1.	B.H.C.	37000	31332	30241	32026	25008
2.	D.D.T.	9088	6722	5960	4252	6017
3.	Malathion	7600	4098	2320	2773	4162
4.	Parathion (Methyl)	4500	2147	2356	2085	2030
5.	Fenitrothion	0	16	25	12	0
6.	Dimethoate	3581	2230	1770	2134	1779
7.	D.D.V.P.	4460	1695	1574	1201	2431
8.	Quinalphos	3500	2190	2460	2857	2382
9.	Monocrotosphos	15850	6211	7247	8939	9247
10.	Phospharnidon	4650	2186	1991	1333	3243
11.	Phorate	4850	3165	3305	4162	3651
12.	Ethion	1250	577	754	983	1247
13.	Endosulphan	7800	6823	7373	6557	8028
14.	Fenvalarate	1800	1030	1240	1168	1089
15.	Cyperemethran	1810	976	1040	1368	1997
16.	Anilophos	1000	443	0	243	71
17.	Acephate	300	332	467	869	1374
18.	Chlorpyriphos	2300	56	315	758	1106
19.	Phosalone	1000	568	357	332	478
20.	Metasystox	0	346	376	362	715
21.	Abate	0	299	317	58	50
22.	Fenthion	0	0	156	142	202
23.	Triazaphos	0	0	187	379	938
24.	Lindane	700	0	0	631	542
	Total	113239	73442	71831	75624	77787

Contd.....

S. No.	Product Name	Ins. Cap.	PRODUCTION			
			92-93	93-94	94-95	95-96
FUNGICIDES						
25.	Captan & Cptafol	1800	685	520	725	936
26.	Thiram (Thiocarbamate)	180	22	0	35	35
27.	Ziram (Thiocarbamate)	384	183	121	263	201
28.	Carbendazim (Bavistin)	1275	708	649	631	646
28.	Calixin	470	196	171	317	289
30.	Mancozab	4300	3599	4046	4128	4586
	Total	8409	5393	5507	6099	6693
HERBICIDES						
31.	2, 4-D	1860	536	744	742	792
32.	Butachlor	2560	1496	582	851	623
	Total	4420	2032	1326	1593	1415
WEEDICIDES						
33.	Isoproturon	7038	2110	2564	4242	6270
34.	Basalin	300	128	138	106	147
35.	Glyphosate	900	0	0	810	870
36.	Paraquat	2000	0	0	0	1110
37.	Alachlor	0	0	0	0	135
38.	Diuron	100	0	0	0	0
	Total	10338	2238	2700	5158	8541
RODENTICIDES						
39.	Zinc Phosphide	860	271	519	468	404
	Total	860	271	519	468	404
FUMIGANTS						
40.	Aluminium Phosphide	1300	1039	1467	1747	1759
41.	Methle Bromide	300	51	78	69	89
	Total	1600	1090	1545	1816	1848
	Grand Total	138866	84466	83428	90758	96688

{Pest Management May 1997, 29-30}

EXPORT

62 Several commodities off restricted list of exports

In a significant move to further liberalise agricultural commodity exports, the Ministry of Commerce has pruned the negative list of exports. In a recent notification, the Director General of Foreign Trade has deleted several items from the restricted list i.e., those permitted for export under licence.

The export of all types of pulses, including lent ls, gram, beans and flour made therefrom has been allowed in consumer packs of up to 5 kg. The export of milk, baby milk and sterilised liquid milk has been freely permitted. The licensing restriction for the export of castor seed has been removed.

The announcement has been widely welcomed by the commodity traders.

Earlier, the exporters had to make an application for a licence and wait for an indefinite period of time without any guarantee that a licence would be issued. Because of delays, export contracts were rendered void on many occasions. Also, there were allegations that the procedure lacked transperancy.

Indian pulses such as masoor, tur (arhar) and moong are in demand in the West Asian countries. The permission to export in consumer packs would mean a higher unit value realisation, said shippers.

Discounting fears of large-scale exports affecting domestic prices, traders said India was already a major importer of pulses in bulk to take care of stagnating indigenous production. Export would realise better prices for the farmers, they said.

The export of pulses in bulk or in packs exceeding 5 kg would continue to be under licence. Some traders complained that the pack size should be raised to 10 or 20 kg.

{Business Line 16 December 1997,13}

63 Seed exports

In a move to liberalise agri-business, the Union government has for the first time permitted the large scale export of seeds of all the major cereals and oilseeds of the country.

Till now seeds were a part of the restricted list under the Exim policy 1992-97.

The government has decided that the seeds of 13 major crops can now be exported from the country without a licence, up to a maximum annual quantity ceiling fixed by the ministry of agriculture. Both public and private sector seed companies, along with exporters, will now be able to sell the seeds of these Indian cereals in the world market.

In case exporters get seeds produced specially to meet a specific export order, they will be free to export the entire quantity, irrespective of the

ceiling. The exporters will have to inform the agriculture ministry at least two months before the harvesting of the crop in question that they have a specific export order.

In fact, traders are now free to privately grow crops still on the restricted list and export the seeds even without giving advance notice to the ministry.

Traders who pick up seeds from the open market for exports will also be able to do so without a license. The government will only intervene if there is an emergency caused by a natural calamity and the seeds are required within the country.

In such a scenario, the government may lower the quantitative ceiling. The entire trade in seeds will be monitored by the directorate general of foreign trade and the Exim committee of the department of agriculture and cooperation.

{The Economic Times 15 December 1997,1}

64 Exports - Onions

Figures in 1,000 t	1991	1992	1993	1994	1995	1995 % of world exports	1995 Value (1,000 US$)
Australia	58	60	42	69	80	2.3	26,500
Belgium	–	11	20	56	52	1.5	30,000
Chile	72	19	25	53	83	2.4	23,500
China	21	18	37	69	57	1.6	22,500
Egypt	61	60	138	131	116	3.3	17,000
India	278	300	250	306	400	11.5	73,500
Italy	43	36	39	50	56	1.6	33,000
Mexico	200	185	206	203	217	6.3	165,500
Netherlands	519	555	532	624	485	14.0	207,500
New Zealand	56	80	98	135	133	3.8	58,500
Poland	100	92	155	150	86	2.5	19,500
Spain	240	197	219	242	257	7.4	83,500
USA	163	168	205	370	308	8.9	109,500
Other countries	764	646	674	734	1,134	32.9	336,000
World total	2,577	2,432	2,620	3,136	3,464	100.0	1,206,000

{Statistical supplement - Fruit World International 4, 1997}

65 Exports - Grapes

Figures in 1,000 t	1991	1992	1993	1994	1995	1995 % of world exports	1995 Value (1,000 US$)
Argentina	12	5	4	5	9	0.5	9,500
Australia	9	16	13	13	15	0.8	24,000
Chile	419	429	441	458	443	23.5	345,000
Cyprus	9	7	6	5	5	0.3	4,500
France	12	14	16	14	18	1.0	24,500
Greece	110	107	71	104	108	5.7	105,500
India	–	–	16	17	17	0.9	15,000
Italy	460	519	643	660	471	25.0	430,500
Lebanon	22	19	20	15	15	0.8	4,000
South Africa	56	78	85	100	90	4.8	111,500
Spain	114	124	127	92	91	4.8	110,000
Turkey	12	16	23	26	25	1.3	14,500
USA	246	234	248	260	264	14.0	343,000
Other countries	178	175	205	241	313	16.6	386,500
World total	1,659	1,743	1,918	2,010	1,884	100.0	1,928,000

{Statistical supplement - Fruit World International 4, 1997}

66 Exports of cashew kernels & CNSL

Year	Cashew kernel Quantity (Tonnes)	Cashew kernel Value (Rs. Lakhs)	Cashewnut Shell Liquid Quantity (Tonnes)	Cashewnut Shell Liquid Value (Rs. Lakhs)
1992-93	53436	74549	4258	381
1993-94	69884	104602	3625	290
1994-95	77000	124628	3807	244
1995-96	70334	124050	760	145
1996-97	68758	128104	1350	199

{Business Line 23 December 1997, 23}

67 Export earnings by cashew sector

The foreign exchange earned by India through export of cashew kernels, cashewnut shell liquid and allied products during 1996-97 was Rs. 1,283.03 crores, an all time record for cashew exports in terms of value.

The exports in 1996-97 comprised 68,758 tonnes of cashew kernels valued at Rs. 1,281.04 crores and 1,350 tonnes of cashewnut shell liquid and cardanol valued at Rs. 1.99 crores.

During 1995-96, some 70,334 tonnes of cashew kernels valued at Rs 1,240.50 crores and 760 tonnes of cashewnut shell liquid and cardanol valued at Rs 1.45 crores were exported, according to the figures of the Cashew Export Promotion Council (CEPC).

Cashew was the third largest foreign exchange earner among agricultural products exported during 1996-97, rice being the first and coffee the second. Mr.T.K.Shahal Hassan Musaliar, Chairman, CEPC, told the 42nd annual general meeting of the council.

Import of raw cashewnuts during 1996-97 was only 1,92,285 tonnes valued at Rs. 640.58 crores against 2,22,819 tonnes valued at Rs. 760.08 crores during 1995-96.

The unit price realised for cashew kernels exported in 1996-97 was Rs 186.31 per kg against Rs 176.37 per kg in 1995-96. The unit price of raw cashewnuts imported during 1996-97 was Rs. 33.31 per kg he said.

The target fixed by the Centre for export of cashew kernels and allied products was $ 374 millions. Though export earnings during 1996-97 was an all-time record in rupee terms, it was only for $ 362 millions against the target of $ 374 millions, Mr. Musaliar said. Shortage of raw nut supply, both from indigenous and imported sources, and the sluggish market prevailing the world over were the main reasons for not achieving the export target fixed by the Government, he said.

The US, the Netherlands, Japan, the U.K., Australia, the UAE, Singapore, Germany, Israel, Hongkong and France were the major importers of Indian cashew kernels in 1996-97. Decline in exports were recorded in respect of Japan, Hong Kong, Chinese Taipei, Bahrain, Kuwait, Lebanon, Spain, Greece, Austria and Russia. In respect of Russia, the fall was significant. This was because there was no export of cashew kernels to Russia under the rupee escrow account/debt repayment mechanism in 1996-97. Exports to Russia declined to 546 tonnes in 1996-97 from 14,905 tonnes in 1995-96, Mr.Musaliar said.

The overall decrease in the quantum of export of cashew kernels during 1996-97 was due to the fall in the availability of raw cashewnuts to the cashew processing and exporting industry.

"The traditional suppliers of raw cashewnuts enhanced the processing capacities and , therefore, we did not get the quantity of raw nuts as expected, " Mr. Musliar said, adding that Vietnam, which supplied 39,000 tonnes of raw

cashewnuts to India in 1994-95, had increased its processing capacity and imposed a cess of 15 per cent on raw nut export. "As such, we could not get raw cashew from them last year. However, due to bumper production of raw nuts during the current year." As far as the domestic supply in India was concerned against the preliminary forecast of 4.3 lakh tonnes in 1996-97 production had dwindled to 3,50,000 tonnes. Untimely rain during flowering season, attack of tea mosquitoes in Kerala and Karnataka and damage caused by cyclone to yielding cashew trees in Andhra Pradesh were the main reasons for the fall in domestic production in 1996-97, he said. *{Business Line 29 September 1997,11}*

68 Seafood exporters get more time for quality certificate

The Ministry of Commerce has extended the time limit to seafood processing units to abide by national quality standards, which is mandatory pre-condition before the products of the individual units can be exported. The time limit to upgrade quality, which was to end on December 31, has now been extended to June 30, 1998.

The billion dollar marine export industry was confronting a major crisis as only eight seafood exporting units had been certified by the Export Inspection Agency. Through a notification dated August 21, 1995, the Union Government had stipulated several quality parameters which individual units were supposed to abide by, in order to pursue their export activities. With only eight units having been certified by EIA, the Seafood Exporters' Association of India had said that the Rs. 4,200- crore marine export industry would have come to a stand-still if the deadline for abiding by the quality norms were not extended. The Government, through a communication of the Export Inspection Council of India, dated December 5, has extended the deadline by another six months, subject to certain conditions.

The conditions are: All units which are seeking an extension of deadline should intimate the EIA about the rectification/upgradations already carried out by the unit before December 20. Also, a definite plan of action should be submitted outlining how the remaining quality specifications mentioned in the Government notification will be completed by the current deadline.

The EIA, in turn, will arrange to visit the unit to evaluate the rectification/upgradation which has been undertaken and examine the potential plan of action, the communication said. If such programmes are found satisfactory by the EIA, then it can grant extension of six months to such units.

However, the notification points out that such units which have been granted an extension will not be permitted to undertake exports to the European Union, until the EIA is fully satisfied that the units are abiding by all the Government's quality specifications. *{Business Line 9 December 1997,13}*

IMPORT

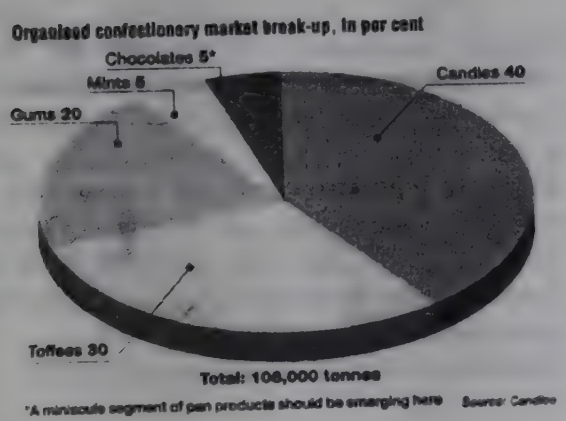
69 India's imports of vegetable oils

	Soybean	Sunflower	Rapeseed	Coconut	Palm	Cottonseed	Total
1982–83	537	0	115	10	59	0	1,259
1987–88	419	79	337	0	1,120	0	1,955
1992–93	42	0	11	5	30	0	88
1993–94	41	0	15	5	200	0	261
1994–95	60	60	20	5	480	40	625
1995–96	60	80	40	0	970	50	1,150
1996–97[a]	110	300	40	0	800	50	1,300

{INFORM 8(8), 1997,827}

TRADE INFORMATION

70 Organised confectionery market



{Business Standard - the Strategist, 25 November 1997,2}

71 New vanaspati medium

The vanaspati industry proposes to introduce a new cooking medium called 'Randhan' which will have the same cooking qualities as vanaspati but will differ in saturated fatty acid and other contents to suit the requirement of a varied section of users, especially the health conscious consumers. While vanaspati is essentially a mixture of various edible oils, Randhan will consist of a blend of hydrogenated fats and liquid oils.

The industry believes that the new product, which can also have various other additives like vitamins, micronutrients and flavours, will conform to the taste and health requirement of consumers of different regions.

The product can also contain anti-oxidant agent to increase its shelf life and anti-foam agents to make it amenable for re-use for deep frying without any deterioration in cooking or nutritional qualities.

VMAI chairman S.K. Sinha said yesterday the production of the new product would not require any major changes in the machinery used at the existing vanaspati plants and would also not differ much in terms of the cost of production.

He expected many of the existing vanaspati units to diversify their production base by taking on to their new product.

Sinha said vanaspati was used not only because it was perceived to be a cost-effective substitute for ghee but also because of its acceptable taste and the longer shelf life of products cooked in it.

The category of products, containing various proportions of hydrogenated and refined liquid fats, including milk fat, would help win back consumers to the vanaspati segment.
{Business Standard 29 October 1997,8}

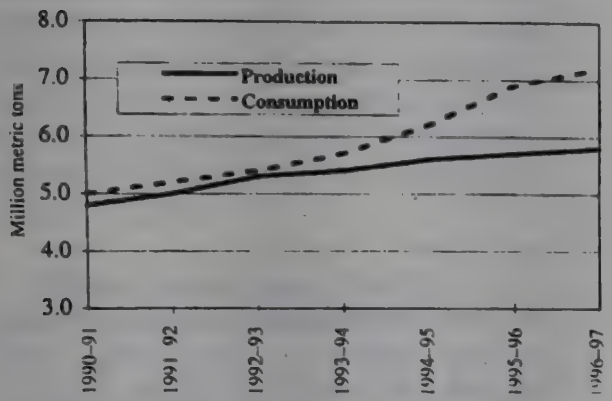
72 'Dhara Health' oil

The National Dairy Development Board (NDDB) has introduced Dhara Health, a new variant to its edible oil portfolio, which will vie with the other labels in the already cluttered cholesterol conscious segment.

The refined sunflower oil, will come in the de-waxed form, unlike other brands in this category.

The 'zero-cholesterol', 'ultra-refined' sunflower oil has all its wax contents removed by centrifugal force in extreme cold conditions which helps the wax in the oil to solidify and get separated. The benefit of de-waxing is that it makes the oil absolutely non-sticky and hence very light, which in turn ensures that only a limited quantity gets absorbed in cooked food.
{Business Line 20 November 1997,13}

73 Production and consumption of vegetable oils



{INFORM 8(8) 1997,825}

74 Vegetable oil industries estimated capacity and production, 1996

(In lakh Mts.)

Industry	No.of Units	Annual capacity	% Capacity Utilisation (App.)
1. Vanaspati	170	26.5	35-40
2. Solvent Extracted oil	810	322	40-45
3. Unorganised (like rotaries, ghanis etc.)	N.A.	180	30

{SEA News Circular August 1997,32}

75 Broiler meat consumption

Countries	Year		Change
	1990 Consumption (Kg)	1995 Consumption (Kg)	
India	0.30	0.50	+ 0.20
Indonesia	1.50	3.00	+ 1.50
Malaysia	18.0	24.0	+ 6.0
Pakistan	0.75	1.30	+ 0.55
Phillippines	3.50	4.80	+ 1.30
Singapore	35.0	39.50	+ 4.50
Thailand	7.0	8.70	+ 1.70
Vietnam	0.6	1.0	+ 0.40
Bangladesh	0.5	0.70	+ 0.20
Australia	24.0	26.10	+ 2.10
Brunei	38.0	41.0	+ 3.0
World	5.0	6.70	+ 1.70
Asia	2.83	3.30	+ 0.50

{Feed Trends October-November, 1996,4}

76 Cold storage facilities at airports

The Agricultural and Processed Food Products Export Development Authority (APEDA) is planning to construct cargo handling and cold storage facilities for perishables at three major airports.

The airports where storage facilities are to be constructed by the APEDA are Thiruvananthapuram, Chennai and Hyderabad.
{Business Line 3 October 1997, 13}

77 Industry taxation

The taxation levels on food processing industry in India are one of the highest in the world and this causes a big impediment to the food industry in India, said Arthur Andersen country tax partner Jairaj Purandare at the Second International Conference on food processing in Chennai organised by the Confederation of Indian Industry (CII).

A study conducted by Arthur Andersen of the taxation levels in Asian countries showed that India has one of the highest levels of taxation. The study considered excise and sales duty, import duties, sales tax and octroi taxes applicable to processed foods, as well as food processing, vending, packaging and milking machinery.

The countries studied were Malaysia, Indonesia, Phillipines, Sri Lanka, China, India and Thailand. Mr. Purandare said that the excise duty in India ranges between 8 per cent and 18 per cent. At times it is a whopping 40 per cent of maximum retail price (MRP) as in the case of carbonated drinks. Thailand is the only other country that levies excise duty, but only on carbonated drinks and fruit juices. Excise was not levied in other countries at all.

Octroi was also another big hurdle. Here again, except for Thailand which levied a municipal tax on carbonated drinks at 10 per cent, octroi was not levied in other countries at all. (Maharastra levies octroi at 7 per cent).

Food processing machinery attracts the highest import duty in India. Sales tax too, on average, is the second highest in India behind China while excise duty on machinery is levied only in India.

India is the only country to levy octroi on processed foods. The study adds that India and Sri Lanka levy the highest import duties.

Talking about the branded processed foods attracting higher rates of duties, Britannia Industries Ltd., Chairman Sunil Alagh said that a product like biscuits, a highly nutritious product with a penetration of 80 per cent of households in India, was subjected to a sales tax of eight per cent. He said that while the government states that nutritious products will not be subjected to the burden of tax, the realities were different.
{The Times of India 12 December 1997,17}

78 India faces hitches in global market for dairy products

The National Dairy Development Board's dream to project the nation as an exporter of 'world-class' dairy products is far from reality. India, emerging as the world's largest milk-producing country, second only to the U.S., has suddenly found itself in a fix.

International agencies like Food and Agriculture Organisation (FAO) and World Health Organisation (WHO) of the U.N. have sounded a death-knell on any attempts being made by India to go global; unless it meets the minimum quality standards set by both organisations, pertaining to health and hygiene in the dairy-farming industry.

In an interview with this newspaper here on Tuesday, FAO's chief of animal production service and health division J.A. Phelan said that export of Indian livestock products into international trade would only be allowed if the country maintains the minimum sanitary standards for dairy products.

"If India thinks there is a kind of discrimination being made it has the right to appeal to the World Trade Organisation (WTO)," he said.

"The international trade is restricted in foot-and-mouth (the animals suffering from diseases from foot-and-mouth) free zones as per U.N. norms. India has been categorised under FAM zone where animals have been found diseased, " according to Dr Phelan.

When asked how it would directly affect milk and milk products, Dr Phelan said, the bacterial content is higher in this case under the prescribed international norms. "FAO can't make exception in India on this score," he asserted.

On the other hand, NDDB refuted the allegation saying that there could not be any bacterial content in the dairy product and that it was open to test by any agency.

When asked whether FAO conducted any research to support this fact, Dr Phelan said that there has been no research on the subject so far, but numerous market surveys conducted in the country indicate that India falls under the FAM zone.

However, applauding India's considerable progress in dairy development, he pointed out that countries in Europe and the U.S. would accept the same standards of health and hygiene as applied in their homeland.
{The Times of India 4 December 1997,6}

79 Cadbury's to launch bournvita in sachets

Cadbury India is launching its well-known beverage Bournvita in sachets. The test marketing exercise is expected to be kicked off in January 1998. Besides, tapping the cities for this exercise, the chocolate major proposes to go test rural areas too.

This is the first time Cadbury's would be testing the rural waters. The test market launch would be carried for three months by which time the company hopes to gauge the mood of the market for sachet beverages.

This is especially so since foods in sachets, a recent concept, has not met with substantial success similar to that of shampoos and detergents. Bournvita will be available in two new packs : a single-serve sachet of 10 gm net weight and a "great-value" pouch of 100 gm.
{The Financial Express 11 December 1997,3}

80 'Rasna' toffees

PIOMA Industries will soon be launching the 'Rasna' brand of candies and toffees soon into the market. The company had already earlier launched the Rasna Spread Maker, claimed to be the first in the world to have dual format of liquid and powder packed separately.

The company has also developed a special dual pouch pack, where the powder and liquid are separately packed. The drink is available in 13 flavours.
{The Financial Express 12 December 1997,4}

81 Horticulture Board to hook on to Nicnet

The NHBNET, the market information service of the National Horticulture Board (NHB), is to be integrated with Nicnet, the countrywide computerised information network of the National Informatics Centre (NIC).

This will enable NHBNET to have a much wider reach and its link-up arrangement to Nicnet is expected to be ready shortly, NHB's assistant director (Marketing) in Chennai, Mrs T Bala Sudhahari said last week.

The NHBNET generates information on a daily basis on wholesale prices, arrivals and retail rates besides analysing trends in the various markets of the country for important fruits and vegetables.

Primary data is collected by NHB staff from 22 MIS centres of the NHB and 11 sub-centres in different parts of the country by noon daily and sent to the NHB's central co-ordination cell at New Delhi through the NHBNET, which then issues a compiled price report.

The price trends not only help those in horticulture plan their operations but also enables farmers to have a good idea about what their produce is fetching in the market.

Most often, lack of information results in a bad bargain for the primary producers.

It is in this context that the integration of NHBNET to Nicnet will give greater access to the former's data, as every district collectorate in the country is already connected to the Nicnet, Mrs Bala said speaking to *The Economic Times* in Chennai.

It then becomes one network and all those having access to Nicnet could also access the market information data on important horticulture products she said.
{The Economic Times 8 October 1997,18}

82 Agri-database

A new electronic database on agriculture and allied disciplines has been introduced in India. Packed in a single CD-ROM, it includes the most extensive agriculture information collection anywhere in the world, with more than 35 lakh abstracts compiled and updated since 1973 from over 100 countries. Developed by Centre for Agriculture and Bio-Sciences International (CABI), London, it was launched in New Delhi by the director general of Indian Council of Agricultural Research (ICAR), Dr R S Paroda.
{Deccan Herald 16 December 1997,20}

83 Poultry database

The Bio-Informatics Centre of the Tamil Nadu University for Veterinary and Animal Sciences (TANUVAS) has created a database of 339 research abstracts in poultry, according to a press release.

Available on computer floppy discs, the database can be exchanged through network with the Institutions in India and abroad. Information can be retrieved by species-wise, title, name of the researcher, year of study, or the department in which the research was conducted.
{Business Line 10 November 1997,11}

FOOD REGULATION, QUALITY CONTROL AND HYGIENE

84 Mace Grading and Marking Rules, 1997

G.S.R. 301.—Whereas the draft Mace Grading and Marking Rules, 1997 were published, as required by section 3 of the Agricultural Produce (Grading and Marking) Act, 1937 (1 of 1937) under the Notification of the Government of India in the Ministry of Rural Areas and Employment number G.S.R. 56 dated, the 3rd February 1996, inviting objections and suggestions from all persons likely to be affected thereby, before the expiry of the period of forty-five days from the date on which copies of the Gazette containing the said notification are made available to the public;

And, whereas the copies of the said Gazette were made available to the public on 6-3-1996;

And, whereas the objections and suggestions received from the public in respect of the said draft rules have been duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by section 3 of the Agricultural Produce (Grading and Marking) Act, 1937, the Central Government hereby makes the following rules, namely :—

1. Short title and commencement.—(1) These rules may be called the Mace Grading and Marking Rules, 1997.

(2) They shall apply to Mace whole and Mace Ground (Powdered).

(3) They shall come into force on the date of their publication in the Official Gazette.

2. Definitions.—In these rules, unless the context otherwise requires :—

(a) "Agmark label" and "Agmark replica" mean the Agmark label and the Agmark replica as specified in the General Grading and Marking Rules, 1988;

(b) "Agricultural Marketing Adviser" means the Agricultural Marketing Adviser to the Government of India;

(c) "Authorised Packer" means a person or body of persons who has been granted a certificate of authorisation to grade and mark mace whole and/or mace powder in accordance with the grade standards and procedure specified in these rules;

(d) "Approved chemist" means chemist approved by the competent authority to undertake Agmark grading;

(e) "Approved laboratory" means laboratory approved by the competent authority for testing of mace whole and|or mace powder for Agmark grading ;

(f) "Certificate of Authorisation" means a certificate issued under rule 3 of the provisions of the General Grading and Marking Rules, 1988;

(g) "Grade desingation mark" means the Agmark label or the Agmark replica referred to in sub-rule (1) or sub-rule (2) of rule 5, of these rules as the case may be;

(h) "Schedule" means Schedule annexed to these rules;

3. Grade designation.—For the purpose of these rules the Grade designation shall be the names of the grades which indicate the quality of mace wholelor mace powder as given under column (1) of Schedule-II and Schedule-III.

4. Definition of Quality.—For the purpose of these rules the definition of the quality shall be such as given against each grade designation in column (2) to (8) of Schedule-III.

5. Grade designation mark.—(1) The grade designation mark shall consist of an Agmark label as specified in Part-I of Schedule-I and shall specify the name of the commodity, grade designation and a design consisting of an outline map of India with the word "AGMARK" and a figure of rising sun resembling the design as specified in Part-I of Schedule-I; or

(2) Notwithstanding anything contained in sub-rule (1) the Agricultural Marketing Adviser or any officer authorised by him in this behalf may, subject to the conditions specified in sub-rule (4) of rule 10 of the General Grading and Marking Rules, 1988, permit any authorised packer to use Agmark replica, as specified in Part-II of Schedule-I consisting of a design incorporating the work "AGMARK", serial number of the Certificate of Authorisation, the name of the commodity and grade designation, instead of Agmark label.

6. Method of packing.—(1) Mace whole shall be packed in clean, sound and dry jute cloth bags laminated with polyethylene or poly propylene or in pouches made of food grade plastic materials;

(2) Mace powder shall be packed in new, clean, sound and dry containers made of tin, glass or in pouches made of laminated|extrusioned|metallised| multilayer food grade plastic materials;

(3) The containers shall be free from insect infestation fungus contamination, undesirable or obnoxious smell and substances which may damage the contents;

(4) Each container shall be securely closed and suitably sealed;

(5) The net weight of the graded mace and mace powder packed in container shall be 25 grams, 50 grams, 100 grams, 200 grams, 500 grams, 1 kg. and thereafter in multiples of 1 kg. as per the packaged commodities Rules, 1977, as amended from time to time;

(6) Suitable number of consumer packs containing graded material of the same grade designation and from the same lot-batch may be packed in master container such as wooden case, cardboard carton etc.

7. Method of Marking.—(1) A grade designation mark shall be securely affixed to or printed on each container of mace whole or powder in a manner approved by the Agricultural Marketing Adviser or an officer authorised by him in this behalf in accordance with rule 11 of the General Grading and Marking Rules, 1988;

(2) In addition to the grade designation mark, the following particulars shall be clearly and indelibly marked on the label or on the package :—

(a) Place of packing,

(b) Date of packing in month and year,

(c) Lot|batch number,

(d) Net weight,

(e) Grade,

(f) Maximum retail price inclusive of all taxes,

(g) Date of expiry,

(h) Name and address of the authorised packer;

(3) Proper care shall be taken to ensure that the ink used for marking does not contaminate the product;

(4) The authorised packer may, after obtaining prior approval of the Agricultural Marketing

Provided that the private trade mark does not represent quality or grade of the commodity different from that indicated by the grade designation mark affixed to the packages in accordance with these rules.

8. Special conditions of grant of certificate of authorisation.—Notwithstanding anything contained in sub-rule (8) of rule 3 of the General Grading and Marking Rules, 1988, the certificate of authorisation for grading and marking mace whole and|or mace powder under these rules shall not be granted if :—

(a) the authorised packer has not either set up his own laboratory manned by a qualified chemist approved by the Agricultural Marketing Adviser or an officer authorised by him in this behalf in accordance with rule 9 of the General Grading and Marking Rules, 1988 for testing the quality of mace hole and mace powder in accordance with the specified quality standards or does not have an agreement with an approved laboratory for the purpose;

(b) the premises for processing, grinding and packing are not maintained in perfect hygenic and sanitary conditions;

(c) the peronnel engaged in these operations are not in sound health and free from any contagious disease.

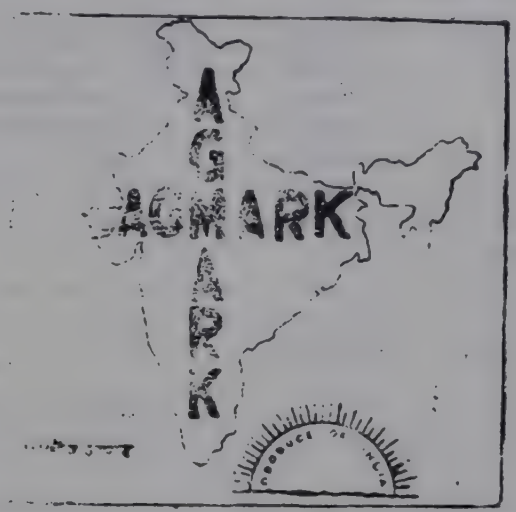
SCHEDULE I

PART I

[See rule 5(1)]

Grade designation mark

(DESIGN ON AGMARK LABEL)



SCHEDULE I

PART II

[See rule 5(2)]

Grade designation mark

(DESIGN ON AGMARK LABEL)

NAME OF COMMODITY.....

GRADE.....

SCHEDULE-II

(See rules 3 and 4)

Grade desigation and definition of quality of Mace (Jaepatri) whole.

Grade designation	Definition of quality				
	Special requirements				
	Inorganic extraneous matter per cent by mass (maximum)	Organic extraneous matter per cent by mass (maximum)	Insect damaged per cent by mass (maximum)	Moisture content percent by mass (maximum)	Volatile oil content ml/ 100gm. (minimum)
1	2	3	4	5	6
Standard	0.5	1.5	3 0	12.0	11.0

General requirements
7

Mace (Jaepatri) Whole shall :—

(a) be the dried, flattened seed coat or aril of the ripe fruit of nutmeg tree, myristica fragrans Houttuuyn;

(b) be free from aril of other variety of myristica malabarica or fatua (Bombay-mace) and Myristica argentia (wild mace);

(c) be of buff or light brown colour, horny and brittle;

(d) have the characteristic fresh and aromatice odour and bitter, acrid and warm flavour;

(e) be free from rancid taste, musty odour, off-flavour, mould growth, insect infestation rodent contamination and added colouring matter;

(f) comply with the restrictions in regard to aflatoxin, metallic and other naturally occouring toxic substances contamination insecticide residues and other provision as prescribed under the Prevention of Food Adulteration Rules, 1955.

Explanation :—(1) Inorganic extraneous matter includes dust, dirt, sand, stones, earth particles

(2) Organic extraneous matter means all vegetable matter other than, mace including aril of other varieties of myristica malabarica or Fatua and Myristica argentia;

(3) Insects damaged mace includes mace partially or wholly bored by insects.

SCHEDULE—III

(See rules 3 and 4)

Grade designation and definition of quality of Mace (Jaepatri) gronuded

Grade desigatnation	Definition of quality					
	Special requirements					
	Moisture content per cent by mass (maximum)	Total ash percent by mass on dry weight basis (maximum)	Acid insoluble ash, percent by mass, on dry weight basis (maximum)	Crude fibre percent by mass on dry weight basis (maximum)	Non volatile ether extract percent by mass on dry weight basis (minimum-maxi um)	Volatile oil ml/ 100 gm. (minimun)
1	2	3	4	5	6	7
Grade-	10.0	2.0	0.5	8 0	22.0—30.0	15.0
Grade II	10 .0	2.5	0.75	8.5	22.0—30.0	11.0

General requirements

8

Mace (Jaepatri) ground shall :—

(a) be the powder obtained by grinding clean, fresh, sound, dried aril of ripe fruit of nutmeg tree (Myristica fragrans), Houttuyn;

(b) be free fron a mixture of grond aril of other variety of Nyristica malabarica or fatua (Bombay mace) and Myristic(wild mace);
and Myristica (wild mace);

(c) have fresh characteristic and aromatic odour and bitter. acrid, warm flavour,

(d) be free from rancid taste, mustry odour, off-flavour, mould growth, insect infestation. rodent contamination and any extraneous matter includin added colouring matter;

(e) Comply with the restrictions in regard to aflatoxin metallic and other naturally occuring tcoxic substances contsmination, insecticide residues and other provisions prescribed under the preventation of Food adulteration rules, 1995.

[F. No. 18011/7/93-M.II]
SUKUMAR DAS. Jt. Secy.

{The Gazette of India, Part II - Section 3 Sub-section(i) No. 31, 1997, 2186 - 2190}

85 Prevention of Food Adulteration (III Amendment) Rules, 1997

G.S.R. 149(E) - Whereas certain draft rules further to amend the Prevention of Food Adulteration Rules, 1955, were published as required by sub-section (1) of section 23 of the Prevention of Food Adulteration Act, 1954 (37 of 1954) with the notification of the Government of India in the Ministry of Health and Family Welfare (Department of Health) number G.S.R. 280(E), dated the 16th July, 1996 in the Gazette of India Extraordinary, Part II, Section 3, sub-section (i), dated the 16th July, 1996 at pages 1 to 7 inviting objections and suggestions from the persons likely to be affected thereby before the expiry of a period of sixty days from the date on which copies of the Gazette of India in which the said notification was published, were made available to the public;

And whereas the copies of the said Gazette of India were made available to the public on the 30th July, 1996;

And whereas the objections and suggestions received from the public on the said draft rules have been considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sub-section (1) of section 23 of the said Act, the Central Government, after consultation with the Cenral Committee for Food Standards, hereby makes the following rules further to amend the Prevention of Food Adulteration Rules, 1955, namely:-

1. (1) These rules may be called the Prevention of Food Adulteration (IIIrd Amendment) Rules, 1997.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In appendix 'B' to the Prevention of Food Adulteration Rules, 1955-

(a) in item A. 11.02.22, against clause (iii) relating to Milk Protein (on dry basis) per cent by weight, for the word and figure, "Min. 37", the words and figures, " Min. 30" shall be substituted.

(b) in item A. 11.02.22.01, against clause (iii) relating to Milk Protein (on dry basis) per cent by weight, for the word and figures, "Not less than 10.5", the words and figure "Not less than 9" shall be substituted.

[F. No. P.-15014/8/94-PH (F)]
RENU SAHNI DHAR, Jt. Secy.
{The Gazette of India Part II - Section 3 - Sub-section(i) No. 106, 1997, 4-5}

86 Prevention of Food Adulteration (4th Amendment) Rules, 1997

G.S.R. 304(E).- Whereas certain draft rules further to amend the Prevention of Food Adulteration Rules, 1955 were published as required by sub-section (1) of section 23 of the Prevention of Food Adulteration Act,

1954 (37 of 1954) in the notification of Government of India in the Ministry of Health and Family Welfare (Department of Health), G.S.R 92(E) dated the 25 February, 1997 in the Gazette of India. Extraordinary, Part II, Section 3, Sub-section (i), dated the 25th February, 1997 inviting objections and suggestions from the persons likely to be affected thereby before the expiry of a period of forty-five days from the date on which copies of the Gazette of India in which the said notification was published, were made available to the public:

And whereas the copies of the said Gazette of India were made available to the public on 3rd March, 1997:

And whereas the objections and suggestions received from the public on the said draft rules have been considered by the Central Government:

Now, therefore, in exercise of the powers conferred by sub-section (1) of section 23 of the said Act the Central Government after consultation with the Central Committee for Food Standards, hereby makes the following rules further to amend the Prevention of Food Adulteration Rules, 1995, namely:-

1. (1) These rules may be called the Prevention of Food Adulteration (4th Amendment) Rules, 1997.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In rule 28 of Prevention of Food Adulteration Rules, 1955 (hereinafter referred to as the principal rules), for the words "synthetic colours", wherever they occur, the words "synthetic food colours" shall be substituted.

3. For rule 29 of the principal rules, the following shall be substituted, namely:-

"29. Use of permitted synthetic food colours prohibited - Use of permitted synthetic food colours in or upon any food other than those enumerated below is prohibited:-

(a) Ice cream, milk lollies, frozen dessert, flavoured milk, yoghurt, ice-cream mix powder;

(b) Biscuits including biscuit wafer, pastries, cakes, confectionery, thread candies, sweets, savouries (dal moth, mongia, phululab, sago papad, dal biji only);

(c) Peas, strawberries and cherries in hermatically sealed containers, preserved or processed papaya, cannned tomato juice, fruit syrup, fruit squash, fruit cordial, jellies, jam, marmalade, candied crystallised or glazed fruits;

(d) Non-alchoholic carbonated and non-carbonated ready-to-serve synthetic beverages including synthetic syrups, sherbets, fruit bar, fruit beverages, fruit drinks, synthetic soft drink concentrates;

(e) Custard powder;

(f) Jelly crystal and ice candy;

(g) Flavouring agents and soup powder (for the period upto and inclusive of 31st December, 1977)"

4. For rule 30 of the principal rules, the following shall be substituted, namely :-

"30. Maximum limit of permitted synthetic food colours - The

maximum limit of permitted synthetic food colours or mixture thereof which may be added to any food article enumerated in rule 29 shall not exceed 100 parts per million of the final food or beverage for consumption, except in case of food articles mentioned in clause (c) of rule 29 where the maximum limit of permitted synthetic food colours shall not exceed 200 parts per million of the final food or beverage for consumption."

5. In rule 42 of the principal rules, in sub-rule (Q), for the words "coal-tar food colour", the words "synthetic food colour" shall be substituted.

6. In rule 48-A of the principal rules, for the "synthetic colours", wherever they occur, the words "synthetic food colours" shall be substituted.

[No. P. 15025/55/95(ii)-PH (F)]

RENU SAINI DHAR. Jt. Secy.

(The Gazette of India Part II - Section 3 - Sub-section(i) No. 224, 1997,5-6)

87 Spice Board in pact with UK lab for product testing

The Spices Board has entered into an agreement with the public health laboratory of the UK and Campden Chorlydel Laboratory of West Germany to correlate testing programmes for spices-based products.

The board chairman, Chandrashekar, told newsmen here on Saturday that the board's testing laboratory at Kochi, which had already received ISO 9002 certification from Britain's Standard Institution, would send the test reports to the British and German laboratories in order to compare the results.

This would help the board to achieve international uniformity in the testing of products. If the test reports are uniform, importers or importing countries would not be able to easily reject Indian spices. It would help improve the reliability and respectability of Indian spices, he said.

Detailing the board's scheme for export promotion, he said the board would give 'spice house certificate' to exporters who invested in processing facilities to ensure consistent quality.

The certificate is a basic requirement for making exporters eligible for many of the quality and financial assistance packages, he said.

(Business Standard 20 October 1997,8)

88 Oils, expeller mustard permitted in vanaspati

Conceding the long-pending demand of the vanaspati industry, the government yesterday allowed the use of indigenous expeller mustard, rapeseed, groundnut and sesame oils in the manufacture of vanaspati.

It has, at the same time, made it compulsory for the manufacturers of vegetable oil products to pack their produce only in containers which carry

ISI mark.

The Vegetable Oil Products Control Order, 1947, which had earlier prohibited the industry from using expeller mustard and other domestic oils, has been amended to facilitate the use of these oils. This has been done in view of the comfortable domestic availability. An official note says the economy has reached a level of maturity where the vanaspati industry could be permitted to consume edible oils, depending on the marketing forces. The measure is expected to help improve capacity utilization.

The restriction of using only ISI marked material for containers of edible oils has been reimposed on observing that a considerable quantity of "rejects" of printed tin-sheets were being used for packaging vegetable oil products.
{Business Standard 30 October 1997,6}

89 Centre revokes Gur Control Order

Buckling under pressure from the Uttar Pradesh Government, the Centre today revoked the Gur Control Order, 1997 imposed on November 1. The order, stipulating stock holding limits for gur, was clamped with a view to arresting the diversion of sugarcane and enhancing sugar output.

Officials in the Food Ministry today maintained that the estimated output for the current season still stands at 12 million tonnes as the incremental output of 5-7 lakh tonnes (expected with the implementation of the Gur Control Order) has not been factored in the indicative sugar budget.

{Business Line 28 November 1997,1}

90 Centre frees storage limit for edible oil trade

The government has freed the edible oil and oilseeds trade from storage control limits, a food ministry statement said yesterday.

"Licensing and storage control provisions in respect of oilseeds and edible oils under the Pulses, Edible Oilseeds and Edible Oils (Storage Control) Order, 1977 stands rescinded,": the statement said.

The order had stipulated that any wholesale trader in metropolitan cities could keep a maximum stock of 80 tonnes of edible oil and 250 tonnes of oilseeds, industry officials said.
{Business Standard 12 November 1997,11}

91 'Saccharin is carcinogen'

A US Advisory Board to the National Toxicology Program narrowly voted to recommend keeping the artificial sweetener saccharin on a list of potential cancer- causing agents.

The Board voted 4-3 to keep the sweetener listed as a carcinogen, which means that based on animal studies, it is likely to cause cancer. Two earlier scientific boards had recommended taking the sweetener off the list.

The recommendation now goes to the National Toxicology Program to consider as it compiles its next "Report

on Carcinogens" for the Health and Human Services Department.
{Business Line 3 November 1997,11}

92 Healthy isoflavones

Isoflavones are an important and fast growing topic in the study of the relationship between health and nutrition, SoyLife from Schouten Products contains isoflavones, saponins and other phytonutrients in a higher concentration than the soy bean itself and is ideal for enriching food products. It is a completely natural product produced purely from the soybean, without any chemicals or additives.

"The discovery of the benefits of isoflavones started with the recognition of the lower incidence of certain degenerative diseases in countries where soy is traditionally eaten in high quantities," explained Dr. Liesbeth Neven, product manager of SoyLife.

The diseases include prostate and breast cancer, heart and cardiovascular disease, high cholesterol and osteoporosis. Cancer institutes currently are researching the effects of isoflavones in preventing certain types of cancer. Isoflavones may also provide an alternative to synthetically derived hormones used in hormone replacement therapies to alleviate menopause symptoms, according to Dr. Leven.

The average of 80 mg a day consumed by Asians is guideline for the recommended intake. However, if taken conventionally a person would have to consume 140 g of tofu or half a litre of soy milk daily, which is not a practical proposition for Western consumers.

The same amount of isoflavones is supplied with only 3 g of SoyLife, which can be incorporated into food products such as cookies, bread, cereals, spreads and drinks. SoyLife can be supplied in fine milled form or in granules and is said to have a roasted nut aroma and taste.
{Food Engineering International June 1997,16}

NEW INDUSTRIES AND COMPANY NEWS

93 Coconut cream unit

The Kerala Dinesh Beedi Workers' Central and Primary Co-operative Society has launched its pilot project of coconut cream manufacturing unit as part of its diversification plans. The unit, started with the technical co-operation of the Regional Research Laboratory (RRL), has a capacity to process 150 nuts a day.

A second unit, manufacturing pickles, will be launched by January. Depending on the success of the two pilot projects, the society will widen its manufacturing base by venturing into areas like mushroom cultivation and processing, goat farming, vegetable cultivation and floriculture.

At the launch, head of RRL's oil

seeds research division C.Arumugham said a slow, but steady diversion of coconut from the oil sector to agro-products or food products sector would ensure a remunerative return to the farmers of the state.

He said that though efforts towards diversification had been initiated by RRL as early as 1980s, the momentum of commercialisation of the technology was slow due to a variety of reasons. The first integrated coconut processing plant based on RRL technology could be commissioned only in 1996 - Fresh Coconut Products at Irinjalakkuda. The Rs 3-crore plant is designed to process 20,000 fresh nuts per day to produce canned coconut cream, spray dried powder, low fat DC and ready to use curry powder, coco vinegar and shell charcoal.
{The Financial Express 18 November 1997,2}

94 Products from cashew kernel soon

The Kerala State Cashew Development Corporation will soon begin production of value-added products from cashew kernel, including salted and fried cashew, salted and roasted cashew, sugar-coated cashew, honey-coated cashew, chilli/pepper-coated cashew, chocolate cashew, cashew butter and cashew powder.

Industries Minister Suseela Gopalan will inagurate the production on November 3 at a function at KSCDC head office in Mundakal.
{The Indian Express(Kochi) 3 November 1997,4}

95 Ready-to-cook frozen foods

The seafood major Amalgam Foods has launched its brand of ready-to-cook frozen fish and vegetables for the domestic market. Christened 'Sumeru', it's already doing a roaring business with several leading food companies making bulk bookings for future consignments. 'Sumeru' is part of the already successful 'Snow Man' brand launched in the metros by Amalgam Foods in collaboration with Hindustan Lever and Japan's Mitsubishi Corporation.

The Sumeru brand now ranges from individually quick-frozen, peeled, deveined, ready-to-cook prawns, boneless and skinless fish fillets individually quick frozen, vacuum-packed marinated fish ready for frying and vacuum-packed seer fish and rohu steaks. Ready-to-fry seafood items like breaded cocktail shrimps, golden breaded prawns, breaded fish fillets and breaded fish fingers too are available under the Sumeru brand.

Vacuum-packed individually quick-frozen baby corn, broccoli, mixed vegetables and green peas too are available. Ready to fry vegetable, mutton cocktail and chicken samosas and mutton and chicken cutlets are also available in the Sumeru stores.
{The Financial Express 9 December 1997,2}

96 Tea bag unit in Pune

India's first sealed tea bag unit is being set up by Hindustan Lever Ltd (HLL) in Pune. HLL is setting up this new, state-of-the-art, facility for exports.

In the new unit, to be inaugurated in January 1998, tea bags will be made using the sealing method. Under the current method, tea bags come out in the stapled form. This will be Unilever's second such unit worldwide. Globally, there are only three units using this technology, with Dilma of Ceylon being the third. The unit will have a capacity for 2000 tonnes by the end of December 1998.

The tea bag facility will use the latest technology in the world. The traditional tea bag machines run usually on electrical circuits. This technology runs on electronic circuits.

"Though the capital investment is higher, the output is also higher. This technology is more reliable and quicker" said Mr V Balaraman, general manager, exports, and head of beverages exports, Hindustan Lever.

The company already has a tea bag unit in Pune. HLL plans to eventually phase out the older technology and use the modern one.

HLL has identified tea bags, in addition to packet tea as a thrust area for exports. HLL, which is also targeting the 'ready-to-drink' (RTD) tea market, is also in the process of setting up a tea upgradation facility in Calcutta. This is currently undergoing commission trials.

The modular plant, again the first of its kind in the country, will help make teas fit for use in the RTD tea markets in countries like Japan and Germany.

It will be a small unit of about 2,000 tonnes per annum. RTD tea market is a very lucrative but calls for stringent quality controls. While the RTD market itself may be difficult to crack, HLL, with this pilot plant, is aiming to get some of the processing business.

HLL is also establishing a green tea experimentation unit in Kerala. Green tea represents a huge market, and HLL is looking at this sector for exports. HLL is also looking at introducing natural flavoured teas like ginger, mint, cardamon, masala teas for the Far East markets.

Instant coffee export market, which collapsed last year, is buoyant this year. To take full advantage of this trend, HLL has launched a new 'three-in-one' ready-to-drink coffee, in single serve satches.

INDEX

STATEMENT ABOUT "FOOD DIGEST"

FORM IV

Under Rule 8 of the Registration of Newspapers (Central Rules 1956)
(See Rule 8)

1.Place of Publication	:	MYSORE
2.Periodicity of its publication	:	QUARTERLY
3.Printer's Name	:	DIRECTOR, CFTRI, MYSORE
Nationality	:	INDIAN
Address	:	DIRECTOR CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE MYSORE - 570 013.
4.Publisher's Name	:	DIRECTOR, CFTRI, MYSORE.
Nationality	:	INDIAN
Address	:	DIRECTOR CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE MYSORE - 570 013.
5.Editor's Name	:	H. Y. MAHAKUTESHWAR
Nationality	:	INDIAN
Address	:	CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE MYSORE - 570 013.
6.Name and address of individuals who own the newspaper and partners or shareholders holding more than one percent of the total capital	:	DIRECTOR CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE MYSORE - 570 013.

I, the Director, hereby declare that the particulars given above are true to best of my knowledge and belief.

PUBLISHER
DIRECTOR, CFTRI

Regd. No. 36762/84

Printed and Published by Director, Central Food Technological Research Institut
Mysore - 570 013, at CFTRI Printing Press. Editor: Shri H. Y. Mahakuteshv
CFTRI, Mysore.